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ABSTRACT

This document contains teacher's materials for a seven-unit secondary education vocational home economics course on textiles and apparel design. The units cover: (1) fiber/fiber characteristics and textile development (including fabrication and dyeing, printing, and finishing); (2) textile and apparel design industries (including their history and the organization of an apparel manufacturing company); (3) textile selection, use, and care; (4) textile and apparel design industry regulations; (5) design procedures (including tasks, factors enhancing design, and applying draping and flat pattern techniques); (6) costing and producing the final design product (including the product completion process, the relationship between product design and construction requirements, and product marketing procedures); and (7) career options and adjustments for those in the textile and apparel fields (including personal characteristics needed in the field and how to manage multiple roles). Materials for each unit include a conceptual outline shown in the left-hand column of each page that corresponds to applicable learning activities and evaluation experiences in the right-hand column. Key points for content discussion and methods for developing critical thinking skills are designated. Content areas relevant to developing basic academic skills are also marked, as are those areas relevant to developing skills within the elements common to all vocational education courses. Fifty teaching aids keyed to the learning and evaluation experiences are included in the document. (CML)

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TEXTILES AND APPAREL DESIGN

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(5) enrollment and assignment of students without discrimination on the basis of race, color, or national origin;

(6) nondiscriminatory practices relating to the use of a student's first language; and

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TEXTILES AND APPAREL DESIGN

Textiles and Apparel Design is one of the various curriculum guides developed for use in Vocational Home Economics Education in Texas. Additional guides are available for secondary education in the areas of Comprehensive and Technical Home Economics, Home Economics Cooperative Education, Home Economics Pre-employment Education (including courses designed for the academically disadvantaged and handicapped students). Other guides are available for adult education and post-secondary education in home economics subject training areas.

Overview of the Guide

Each subject guide is written to the teacher and is correlated closely with the Essential Elements prescribed by the State Board of Education in Texas Administrative Code 75.50 (b), and 75.83 (a) through (x). The competencies in each guide are the essential elements and the sub-competencies are the sub-elements prescribed in the Texas Administrative Codes for Vocational Home Economics. The conceptual outline as shown in the left hand column (corresponding learning and evaluation experiences in the right hand column) relates to the sub-element of each unit. Teaching Aids keyed to the learning and evaluation experiences are located at the end of each book. Designations have been used in the content for developing skills within the Common Elements to all vocational education courses with a designation of [C]. The application of basic/academic skills has been given a designation of [B]. Key points for content discussion and review have been given a KEY QUESTION designation, and methods for developing critical thinking skills have been given a CRITICAL QUESTION designation.

Particular care has been taken to provide age appropriate concepts and learning activities. Teachers will need to exercise judgment, initiative, imagination, and creativity in working cooperatively with students, parents, school administrators, and local advisory council members to develop a local program that will serve the students enrolled in Vocational Home Economics Education. The subject area guides are intended to guide the content, not dictate the content.

TEACHERS SHOULD NOT EXPECT TO USE ALL OF THE SUGGESTED EXPERIENCES IN ONE CLASS NOR FEEL THAT ALL ARE NEEDED TO TEACH ONE ESSENTIAL ELEMENT (WHICH INCLUDES THE COMPETENCY AND SUB-COMPETENCIES). The variety of experiences included should enable teachers to select and use those teaching/learning experiences that will help students reach the objectives.

An excellent resource for information on teaching all students is the book *Guide to Teaching*. The book addresses methods for teaching students with varying learning levels. It also provides special guidelines and information regarding the at-risk students and the disabled or handicapped students.

TAC 75.83
TEXTILES AND APPAREL DESIGN

(m) Textiles and apparel design (1/2 unit) shall include the following essential elements:

(1) Concepts related to fiber/fabric characteristics and textile development. The student shall be provided opportunities to:

(A) classify properties of fibers;
(B) analyze characteristics of natural and synthetic fibers;
(C) discuss methods of fabrication;
(D) describe fabric characteristics;
(E) compare processes for dyeing, printing, and finishing.

(2) Concepts related to the textile and apparel design industries. The student shall be provided opportunities to:

(A) discuss the history of apparel design and manufacturing;
(B) relate the world economy to the textile and apparel design industries; and
(C) outline the organizational structure of an apparel manufacturing company.

(3) Concepts related to textile selection, use, and care. The student shall be provided opportunities to:

(A) summarize textile applications in domestic, business, and industry;
(B) analyze textile suitability for specific uses and validity of manufacturer's claims; and
(C) determine care of textile products.

(4) Concepts and skills related to regulations upon textiles and apparel design industry. The student shall be provided opportunities to:

(A) identify federal legislation regulating fabric and fashion design;
(B) summarize how governmental agencies affect the textile and fashion industries;
(C) identify the assets and liabilities of finishes; and
(D) outline the effects of various environmental conditions on textiles.

(5) Concepts and skills related to design procedures. The student shall be provided opportunities to:

(A) identify tasks to be achieved in the design process;
(B) determine factors which enhance design;
(C) apply design elements and principles; and
(D) apply draping and flat pattern techniques.

(6) Concepts and skills related to costing and producing the final design product. The student shall be provided opportunities to:

(A) identify process for product completion;
(B) relate product design to construction requirements;
(C) describe product marketing procedures; and
(D) describe effect of technology on the textile and apparel industries.

TAC 75.83
TEXTILES AND APPAREL DESIGN
UNIT I

COMPETENCY: (p.1) *Concepts related to fiber/fabric characteristics and textile development.*

SUB-COMPETENCIES:

(A) *Classify properties of fibers.*

(B) *Analyze characteristics of natural and synthetic fibers.*

(C) *Discuss methods of fabrication.*

(D) *Describe fabric characteristics.*

(E) *Compare processes for dyeing, printing, and finishing.*

CONCEPTS

I. Fiber/fabric characteristics and textile development
   A. Properties of fibers

LEARNING AND EVALUATION EXPERIENCES

NOTE: Elements A and B of this course may be taught simultaneously.

Have the students define *fiber*. Instruct the students to read resources and define the following properties of fibers: *abrasion resistance, absorbency, chemical effects, cover, elasticity, environmental conditions, flexibility, hand, luster, pilling, resiliency, specific gravity, static electricity, strength, and thermoplasticity*. Have volunteers explain the terms to the class.[B] [C]

Lead a class discussion on Teaching Aid 1, Physical Properties of Fibers. Have the students create a display using different types of fibers. Students should label the fibers according to the physical properties listed on Teaching Aid 1. Ask the students to analyze the characteristics of fibers found in fabrics worn by students in the classroom. Also ask the students to consider why the fabrics look, feel, and perform differently. KEY QUESTIONS: How is the feel of a fabric affected by the crimp? What affects the way a fabric looks? How is color achieved? What causes luster? What determines the shape, length, crimp, and diameter of a fiber? CRITICAL QUESTION: Why is it important to have access to fiber information?[B]

Lead students to brainstorm and list examples of fabric use in outdoor settings. Based upon the compiled list, lead a class discussion regarding required properties of fibers when fabrics are

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[B] = Basic Skill Reinforcement

[C] = Common Essential Element

exposed to weather. Demonstrate weather changes by exposing fabric samples to water, wind, soil, and heat. KEY QUESTIONS: What conditions are fabrics exposed to when used outdoors? What fiber properties are required for fabrics used outdoors? CRITICAL QUESTIONS: Do fabrics used outdoors require the same fiber properties? Why?

B. Characteristics of natural and manufactured fibers

NOTE: Subsections B1 and B2 may be taught simultaneously. For the purposes of this text, the term *manufactured* is used in place of synthetic when discussing fibers.

Briefly explain natural and manufactured fiber classifications. Describe natural fiber characteristics and manufactured fiber characteristics. Lead a class discussion regarding the differences in natural and manufactured fibers. KEY QUESTIONS: What are the main differences between natural and manufactured fibers? Which fibers are the strongest? Why? Which fibers are the most durable? Why? CRITICAL QUESTION: Why are blended fibers and fabrics common in the consumer marketplace?

1. Natural fibers

Have the students examine fabrics made of pure cotton, linen, silk, ramie, and wool fibers. Instruct the students to identify the source and characteristics of each type of fiber. KEY QUESTIONS: How are protein fibers of silk and wool similar? How are they different? How are the fibers of cotton and linen similar? How are they different? What fiber does ramie resemble the most?

Have the students examine swatches of wool fabric and identify the following properties of wool fibers:

1) Medium weight
2) Good resiliency when dry
3) Fair to excellent hand
4) Good drape and elasticity
5) Little static
6) Poor luster
7) Shrinkage when washed

KEY QUESTIONS: How do wool fiber characteristics directly affect the characteristics of fabric made from wool? What is fleece wool? pulled wool? What is wool used for? CRITICAL QUESTION: Why do wool fibers make warm fabrics?

Instruct the students to read resources to find information on uses of ramie fibers. Give the students samples of ramie, linen, and ramie/cotton fabrics. Have the students compare the samples and write short papers comparing the strength, durability, and care of each fabric. Ask volunteers to share their information with the class. KEY QUESTIONS: Do manufacturers presently use more ramie fibers or linen fibers in clothing? Why? Are ramie garments more acceptable to the public than linen garments? Why? Which natural fibers are not acceptable to the public? Why? Which characteristics of ramie/cotton blends are caused by the ramie fibers? the cotton fibers?[B] [C]

Show the students Teaching Aid 2, Sources of Natural Fibers. Lead a class discussion regarding the sources of common and uncommon natural fibers. Discuss uncommon fibers such as flax, alpaca, and horse hair. KEY QUESTIONS: What are sources of natural fibers? What items are made from flax? What is alpaca used for? How is horse hair used in fabrics?

Show the students Teaching Aid 3, Natural Fibers. Lead a class discussion regarding the differences in natural fiber structures. KEY QUESTIONS: How do the structures of cotton fibers and flax fibers differ? How does the structure of a wool fiber differ from the structure of a silk fiber? CRITICAL QUESTIONS: Do the differences in fiber structure result in different types of fabric? Why? Do the structures of fibers determine the properties of the fibers? Why?

Divide the class into small groups. Give each group a sample of fabric made from natural fibers. Instruct the groups to unravel the samples to identify yarns and then unravel the yarns to identify fibers. Instruct each group to examine the yarns and fibers with a microscope, pick glass, or magnifying glass. Have a representative from each group share the group's information about fabric, yarns, and fibers with the class. KEY QUESTIONS: How do yarns affect fabrics? How do fibers affect fabrics? How do yarns of natural fabrics vary? Do the appearances of natural fibers differ? If so, how?[C]

2. Manufactured fibers

Have students use resources to determine the components of the fibers listed on Teaching Aid 4, Formulas of Manufactured Fibers. Instruct the students to record the major fiber-forming substances of each manufactured fiber. Ask volunteers to share their information with the class.[B] [C]

Have the students study Teaching Aid 5, Manufactured Fibers. Ask the students to classify manufactured fibers according to generic fiber category. Lead a class discussion regarding how manufactured fibers from the generic fiber category and fibers from natural fiber groups are similar. (An example is cellulosic and protein fibers.) KEY QUESTIONS: Which cellulosic generic fibers are popular? Which protein generic fibers are popular? Are natural fibers or manufactured equivalents more readily available? Why? Which manufactured and natural fibers are similar? CRITICAL QUESTION: How are cellulosic fibers and protein fibers similar?[B]

Divide the class into small groups. Give each group a rayon fabric sample, a nylon fabric sample, an embroidery hoop, an eyedropper, a stopwatch, and a copy of Teaching Aid 6, Fabric Absorption Tests. Briefly discuss fabric absorbency and then instruct the groups to conduct the absorbency tests explained on the teaching aid. KEY QUESTIONS: Was one fabric more absorbent than the other? Why? Which fiber characteristics result in good absorbency? poor absorbency? Why?[B]

Have the students read resources for information about manufactured fibers that add strength to fabrics. Instruct the students to summarize the information in short written papers. The papers should include names and descriptions of fibers and the names and uses of fabrics requiring strength. Have the students report their findings to the class. KEY QUESTIONS: Are natural or manufactured fibers used more frequently to bond strength to a product?, Why? What components are added to increase the strength of a fiber?[B]

Provide the class with information explaining the effects heat, bleach, detergent, and mildew have on various manufactured fibers. Have the students work with partners to perform experiments on fabric swatches. Give the students copies of Teaching Aid 7, Experiments with Fibers. Instruct the students to read the directions, conduct the experiments, and record the results.

Have students collect fabric samples constructed with various manufactured fibers. Instruct the students to use the fabric samples to perform a water test. Instruct the students to soak the samples in water and allow them to air dry. For variation, students may machine dry the samples. Ask the students to discuss the test results with the class. KEY QUESTIONS: Which fabrics faded the most? Why? Which fibers are more durable? Which fibers are more delicate? CRITICAL QUESTIONS: Why did some samples take longer to dry than others? Why are some fabrics more prone to wrinkling?[B]

Have the students read selected references to determine the basic properties of manufactured fibers. Encourage the students to concentrate on the physical, chemical, and environmental properties of the fibers. KEY QUESTIONS: How do the properties of manufactured fibers differ? How do fiber properties affect the use of fibers? the handling of fibers?[B]

Hold an orientation session in the periodical and reference section of the school library. Identify sources containing information regarding textile research and development. Instruct each student to select a manufactured fiber and use periodicals and references to gather information. Have students write short papers about the selected fibers. Compile the papers into a classroom reference booklet.[B]

3. Combination yarns and blends

Lead students to brainstorm and define *fiber blends* and *combination yarns*. Cite definitions of fiber blends and combination yarns to the class from a reference book and ask the students to compare the definitions. KEY QUESTIONS: How do the class definitions differ from the reference book definitions? Are the class definitions appropriate? Why?

Lead a class discussion on methods used to combine fibers to produce combination yarns and blends. Have the students examine samples of blended fabrics. Instruct the students to choose partners. Have each student read the label sewn in the neckline of her or his partner's clothing. The students should determine if they are wearing pure or blended fabrics. KEY QUESTIONS: What can one learn about a fabric merely from touching it? What might a garment's price tell about the fibers? What might the fabric weave reveal about a fabric? Which blends seem to be the most common? CRITICAL QUESTION: Why are blends preferred over one-fiber fabrics?

Invite a representative from a local fabric store to visit the class. Ask the speaker to show and discuss several samples of blended fabrics. Prepare the students for the speaker's visit by helping them develop questions that address the advantages and disadvantages of blending fibers. KEY QUESTIONS: Which are more common, blended or pure fibers? Why? What are the advantages of blending fibers? disadvantages?[B]

Lead a class discussion regarding why fibers are frequently blended. Discuss reasons such as strength, durability, launderability, and cost.

As a Student Occupational Activity, have the students develop a survey to learn what types of blended fabrics and fibers high school students prefer. Have the class survey students in the school. KEY QUESTION: How do season, function, and price affect a person's fabric preferences? CRITICAL QUESTION: Why do students prefer specific fibers and fabrics?[C]

Have the students choose fabric samples made of pure natural fibers, pure manufactured fibers, and blended fiber from a grab bag. Have the students estimate the fiber content of each sample. KEY QUESTIONS: What can an individual conclude about fiber content based upon the feel of the fabric? Which fiber is the easiest to identify? CRITICAL QUESTION: Why are some fiber contents easier to determine than others?

Divide the class into two groups to conduct a laboratory experience. Ask the groups to label and mount on white poster board identical swatches of natural, manufactured, and blended fabrics. Have one group place their poster board in a sunny area and leave it for five to ten days. Have the other group place their poster board in a dark location. Instruct the groups to compare the poster boards daily and record any changes in the fabric samples. KEY QUESTION: Why did some samples fade more when exposed to sunlight?[B]

C. Fabrication

Show the students a film about the use of fibers in the development of textiles. Instruct the students to write brief summaries of the process shown in the film. Have the students orally share facts they learned about fibers from the film. Evaluate the written summaries on the basis of content and communication skills.[B]

Define *textiles*. Have the students compile a list of terms associated with textiles. Terms include dyeing, weaving, printing, finishing, and knitting. Suggest references for students to use to locate definitions for the terms. Have the students keep the lists for future reference.[B]

Ask the students to examine a display of fabrics that represent the following methods of fabrication: weaving, knitting, knotting, looping, and webbing. Have the students identify and describe fabrics in the classroom that exhibit different methods of fabrication.

Define *S-twist, Z-twist, ply yarn, single yarn*, and *cord yarn*. Show the students Teaching Aid 8, Types of Yarns. Have students examine samples of ply, single, and cord yarns. Using fibers from 100% cotton balls or thread, ask the students to make an S-twist and a Z-twist yarn. KEY QUESTIONS: Which is the most common twist? Why? What is the difference in the strength of a single yarn, a ply yarn, and a cord yarn? CRITICAL QUESTION: How does a combination of S-twist and Z-twist yarns affect durability?

Lead a class discussion regarding the differences in the construction of yarns made from natural fibers and yarns made from manufactured fibers. Define *cotton* and *woolen systems* for making yarn. KEY QUESTIONS: How does the construction of a cotton yarn differ from the construction of a woolen yarn? Which type of yarn is more expensive to produce? Why? How are blended yarns made?

Define *lace* as an open-work fabric produced by a network of threads that are twisted together and sometimes knotted to form patterns. Arrange for a community resource person to speak to the class and show lace samples and current decorative uses of lace. Lead a class discussion on the different methods of making lace including the following:

1) By hand with bobbins and pins (bobbinet or pillow lace)
2) With needles (needlepoint or point lace)
3) With hooks (tatting)
4) By machine

KEY QUESTIONS: Is handmade or machine-made lace usually more irregular in appearance? Why? What are some of the most common types of laces? (Examples include Battenberg, Chantilly, Needlepoint, Tatting, Irish, Renaissance, and Dresden point.) What are the most expensive types of laces? Why? Why is lace more appropriate for use as decoration or trim rather than for use in an entire garment?

1. Weaving

Instruct students to read resources about the processes involved in obtaining natural fibers and producing manufactured fibers. Have the students trace the production of fabric (from natural fibers and from manufactured fibers) from raw material to the finished woven product. Students should examine and compare the characteristics of each fiber type in various stages of fabric production. KEY QUESTIONS: How do the fibers differ? How are they similar? Which fibers are economical to produce and weave into fabric?[B]

Instruct the students to read selected references and define the following terms related to the parts of the loom and weaving: *plain weave, twill weave, satin weave, novelty weave, warp yarn, filling yarn, shuttle, warping, bobbin, Jacquard loom,* and *shuttleless loom.* Ask the students to record the definitions and discuss them with the class.[B]

Demonstrate plain, twill, and satin weaves using a potholder loom or a computer. Divide the class into small groups. Have the groups recreate the weaves. KEY QUESTIONS: Which weave is strongest? Which weave is least durable? Which weave is the most common?[C]

Have the students study various weaves by unraveling samples of woven fabrics. Ask the students to compare the actual fabric weaves to diagrams of fabrication methods found in reference materials. Instruct the students to write short paragraphs summarizing their comparisons.[B]

Have each student cut twenty fabric strips (ten strips of one color and ten strips of another color). Show students Teaching Aid 9, Basic Weaves. Have the students use the fabric strips to duplicate the weaves. KEY QUESTIONS: Which weave is the most stable?

Why? Is the basket weave more or less stable than the plain weave? Why? Is the twill weave more or less stable than the plain weave? Why? Is the satin weave more or less stable than the plain weave? Why? Which weave is the most durable? Why? Which weave is more prone to snag? Why?

Allow the students to work in pairs to design weaves. Instruct the students to write short descriptions regarding the use, characteristics, appearance, durability, and maintenance of the weaves. Instruct each pair of students to share their weaves and information with the class.[B] [C]

As a Student Occupational Activity, give students the opportunity to use a craft loom to weave a belt, hatband, camera strap, or other small item. Have students share their completed items with the class.

Have the students research various sources to secure information on the use of computers to produce woven fabrics. Ask the students to share their findings in class. KEY QUESTION: How has the use of computers affected the textile and apparel industries? CRITICAL QUESTION: What future textile and apparel industry changes will be attributed to computerization?[B]

Allow the students to examine samples of upholstery and garment fabrics. Ask them to compare the weaves, the diameter of the yarns, and the weight of the fabrics. KEY QUESTIONS: How do upholstery and garment fabrics differ? What makes one fabric more durable than another? How does fabric durability affect fabric use?

Instruct students to use graph paper and strips of paper or yarn to construct designs for the following weaves: plain, basket, 2/1 left-handed twill, 2/2 right-handed twill, herringbone twill, satin, and sateen. Ask volunteers to share their weaves with the class.[C]

2. Knitting

Show the students examples of weft-knitted fabrics and warp-knitted fabrics. Include rib, interlock, double-knit, jersey, and tricot fabrics. Have the students compare the two types of knits and define *weft knits* and *warp knits*. Provide references so students may expand on the definitions. Lead a class discussion on the advantages and disadvantages of knits. KEY QUESTIONS: What are the characteristics of warp knits? weft knits? What types of clothing are constructed using weft knits? warp knits? What characteristics do knitted fabrics have that woven fabrics do not have?[B]

Demonstrate the technique of knitting. Show students examples of even and uneven tension. Lead a class discussion on the importance of consistency and even tension in the overall quality of a knitted product. KEY QUESTIONS: How can uneven tension affect the durability of a finished product? Is a garment knitted with even tension or uneven tension more likely to snag? Why?

Lead a class discussion regarding the impact computers have had on the construction of knitted fabrics. KEY QUESTIONS: Has the use of computers caused fabric designs to improve? Why? How do computers affect the cost of knitting fabric? How has technology advanced the process of knitting fabric?

Give students the opportunity to examine samples of knitted fabrics. Instruct the students to determine what knitting process was used in each sample and give examples of other items that can be knitted using the same process.

Give each student a copy of Teaching Aid 10, Casting On; Teaching Aid 11, Knit Stitch; and Teaching Aid 12, Purl Stitch. Teach each student the stitches and, as a Student Occupational Activity, allow each student to construct a small knitted item.

3. Nonwoven fabrics

Define *knotting*, *looping*, and *webbing*. Have students study examples of each. Encourage students to compare woven and knitted fabrics. KEY QUESTIONS: Which fabrics were made by machine? by hand? CRITICAL QUESTION: What is a unique or primary use of each fabric?

Provide reference materials for students to read to identify methods used to produce nonwoven fabrics. Have students record their findings and share information with the class.[B]

Have students survey pattern books and other resources that feature uses of felt, net, fusible webbing, and other nonwoven fabrics. As a Student Occupational Activity, allow the students to design and produce items using nonwoven fabrics. KEY QUESTION: Why are nonwoven fabrics appropriate for decorative items and not appropriate for garments or upholstery?

Instruct students to research uses of nonwoven fabrics in homes, businesses, and industries. Have students write short reports of their research findings and share the information with the class.[B] [C]

Divide the class into groups. Allow each group to select a topic from the following list:

1) Nonwoven textiles used in disposable items (containers, diapers, packaging)
2) Nonwoven textiles used to manufacture building construction materials

3) Nonwoven textiles made for use in automotive interiors and exteriors (tires)
4) Nonwoven textiles used in the field of medicine (artificial kidneys, artificial arteries)
5) Nonwoven textiles used by the military (airplane bodies, tents, parachutes, bullet-proof vests)
6) Nonwoven textiles used in space exploration (heat shield on re-entry vehicles, space suits)

Have each group prepare a written report and an oral presentation. Allow a representative from each group to share the report with the class.[B] [C]

Divide the class into two groups to debate the following statement: "Knowing the basics of fabrication is important." NOTE: Because technology is continuously changing fabric, emphasis should be placed on knowing the basics of fabrication rather than the specifics. Provide class time for the teams to research the topic and prepare for the debate.[B] [C]

D. Fabric characteristics

Have the students examine a wide variety of fabric swatches. Lead a class discussion regarding why the fabrics feel and look as they do. Encourage the students to consider fabric characteristics such as weight, strength, absorbency, ease of care, durability, comfort, resistance to weather, and colorfastness. KEY QUESTION: What are the advantages and disadvantages of each fabric?

Lead a class discussion on how yarns affect not only the durability of a fabric but also its beauty, comfort, weight, maintenance, and desirability. Have the students examine upholstery fabrics, garment fabrics, and fabrics made with novelty yarns. KEY QUESTIONS: How does the thickness of yarn affect the strength of fabric? How do the yarns of upholstery fabrics and novelty fabrics differ? Are textured or complex yarns stronger? Why?

Define *thread count*. Have the students select various fabric samples and instruct them to determine the thread counts using a pick glass. After the thread counts are determined, have the students create a display of the fabric samples. Students should classify the samples as durable or nondurable according to thread count. KEY QUESTION: How does thread count affect durability? CRITICAL QUESTION: Why is it important to be able to determine the thread count of fabric?

Divide the class into groups. Give each group an assortment of fabric swatches. Instruct the students to use references and pick glasses to aid in identifying the various fabric types. Have the students use Teaching Aid 13, Investigating Fabrics, to list characteristics, care requirements, and uses of each fabric swatch. KEY QUESTIONS: What are the characteristics of each fabric swatch? What care would be required for each fabric? What types of apparel and other textile products might be constructed using each fabric? What special considerations must be made when purchasing napped fabrics? knits?

Have students examine twenty different apparel items. Instruct students to check the labels that describe fiber content and care requirements. Students may check the labels on their own apparel or apparel in clothing stores. Have students use Teaching Aid 14, Investigating Labels, to record information found on the clothing labels. Have students compare their findings in class. KEY QUESTIONS: Where on garments is care information located? How can care information be provided for garments constructed at home? CRITICAL QUESTION: After reading the care labels on clothing, how might the information influence an individual's buying decisions?

Define the term *hang tags*. Lead a class discussion on information commonly found on hang tags. Have the students visit a clothing department or store to locate ten hang tags on men's, women's or children's apparel. Have students use Teaching Aid 15, Investigating Hang Tags, to record hang tag information. KEY QUESTIONS: What information is found on hang tags? What consumer information does not appear on hang tags?

Have the students look at clothing ads in newspapers, fashion magazines, or clothing catalogs and classify the fabrics shown in the ads. Have students make a list of the top five winter, summer, and nonseasonal fabrics. Have volunteers create a bulletin board using the ads and lists. KEY QUESTION: What were the three most popular fabrics of each season? CRITICAL QUESTION: How can choosing nonseasonal fabrics aid in stretching the clothing budget?[C]

Instruct the students to research and identify fabrics that were not used five years ago. Have students write short reports about their findings. Information about fiber content, uses of fabric, durability, and reasons for use should be included in the reports.[B]

Lead students to brainstorm and list characteristics consumers expect fabrics to have. CRITICAL QUESTIONS: What is the perfect fiber? How should the perfect fiber be fabricated into fabric?

E. Dyeing, printing, finishing
  1. Dyeing

Lead a class discussion about the differences among dyeing procedures. Students should consider the resulting characteristics of the fabric. Define *solution dyeing*, *stock dyeing*, *yarn dyeing*, *resist dyeing*, *piece dyeing*, *cross dyeing*, and *greige goods* during the course of the discussion. KEY QUESTIONS: Which dyeing process is more economical? Why? Which dyeing process allows manufacturers to keep up with fashion trends in colors? What is the difference between solution dyeing and stock dyeing? What are fabrics called before they are dyed or printed?

Divide the class into small groups. Instruct each group to obtain information on the history of fabric dyeing. Have the groups present their findings to the class in oral reports that utilize time lines as well as other visual aids. KEY QUESTIONS: What materials have been used to obtain dyes? How are today's dyes made colorfast? What dyeing processes were used in the past? What dyeing processes are currently used? How are dyes extracted? What is the purpose of mordanting? When can mordanting be done? How is a dye bath prepared? What hazards are associated with hand dyeing?[B] [C]

Have the students watch a demonstration of batik dyeing, tie-dyeing, or fabric painting. Solicit student opinion about how colors were used to create an original design. Briefly discuss how dyed fabrics can be used.

Have students examine fabrics to determine the difference between dyeing and printing. Instruct students to unravel fabrics and yarns in order to reveal the difference between stock, yarn, and piece dyeing. Ask students to study their own apparel to determine the way in which the color or design was created. KEY QUESTION: Which type of dyeing is permanent?

Define the term *colorfastness* (fastness) as the ability of dye to retain its color when exposed to different conditions. Divide the class into small groups to test fabrics for colorfastness. Give each group several fabric swatches and a copy of Teaching Aid 16, Testing for Colorfastness. Instruct each group to perform the experiments described on the teaching aid and record the results.

Explain that the term colorfastness (fastness) is relative. For example, a dye may be reasonably colorfast to washing and only moderately colorfast to light. Divide the class into small groups. Instruct each group to create a poster that illustrates degrees of colorfastness desired for different types of garments. For example, a swimsuit should be colorfast to sunlight, laundering, chlorine, and perspiration. Display the group posters in the classroom.

Lead a class discussion on the different coloration methods used in manufacturing textiles for apparel and household products. There are many methods of coloration including vat dyeing, solution dyeing, batik dyeing, pressure dyeing, and yarn dyeing. KEY

2.

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	QUESTIONS: What is the most expensive method of fabric coloration? Which methods of coloration are preferred for manufacturing of different types of apparel? upholstery fabric? carpet? other household textile products? Why?
2. Printing	Write the following words on the chalkboard: *block, roller, duplex, stencil, screen, transfer, blotch, warp, photo, resist, extract, electrostatic*, and *flocking*. Have the students suggest appropriate definitions for the terms. The students should list apparel and interior textile items which are printed using each printing method.[B]
	Divide the class into groups. Assign a printing method to each group. Have each group research the origin of the assigned printing method and share their findings with the class in the form of an oral report. Each oral report should include a fabric sample produced by the given printing process and a drawing or miniature reproduction of the equipment used in the printing process.[B] [C]
	Arrange a field trip to a T-shirt shop to view a demonstration of screen printing, photo printing, and heat transfer printing. If a field trip is not possible, invite a representative from a T-shirt shop to speak to the class. Have the students write paragraphs summarizing the information presented.[B]
	Have students use resource materials to learn about the use of computers in printing textiles. Show the class examples of textiles printed by computer aided design. Lead a class discussion on the information gathered. KEY QUESTIONS: What is the effect of computerization on printed fabric design?[B]
	Help the students make block printers and produce original prints on fabric. Display the printed fabrics in a school display case.
3. Finishing	Have students examine fabric labels to discover finishes that make fabrics easy to care for. Ask the students to identify the most common finishes used. Common finishes include the following: preshrinking, mercerizing, napping, calendering, bleaching, and processes that make fabrics crease-resistant, waterproof, water-repellent, flame-retardant, and mildew-resistant. Lead a class discussion about the importance of fabric finishes. KEY QUESTIONS: How can the type of fabric finish influence an individual's fabric selection decision? Why are some fabrics given more than one finish? Where can information about fabric finish be found in fabric stores and furniture stores?
	Present an illustrated lecture about primary finishes applied to fibers and fabrics. Include labels and advertisements that identify common finishes. KEY QUESTIONS: Why are finishing

processes necessary? How can finishes deceive the consumer? Which finishes are visible? invisible? CRITICAL QUESTION: Why should consumers investigate positive and negative factors associated with finishes?

Have students read selected references about fabric finishes and define the following terms: *mercerize*, *calender*, *durable (permanent) press*, *heat setting*, *soil release*, *stain resistant*, *flame resistant*, *mildew resistant*, *napping*, *preshrink*, *Sanforized®*, *Scotchgard®*, *bleaching*, and *antistatic*. KEY QUESTIONS: How do finishes affect the durability of fabrics? Which finishes can be applied by the consumer? Which finishes are applied commercially?[B]

Arrange a field trip to a large fabric store. Instruct the students to identify fabrics treated with finishes discussed in class. Students should describe each fabric's appearance and finish characteristics. KEY QUESTIONS: Which finishes are for appearance? durability? special effects?

Have students examine fabric samples and read selected references in order to learn about shrinkage control methods. Solicit student comments about the function and quality of each method. Lead a class discussion about shrinkage control methods that produce the best results.[B]

Collect various samples of fabric. Divide the class into pairs and give each pair two fabric samples. One sample should have no finishing treatment and the other should be treated with a finish for shrinkage control. Instruct the students to measure the length and width of each fabric sample and then wash and dry the samples several times. Students should observe and measure the amount of shrinkage, if any. KEY QUESTIONS: How did the fabric finish aid in controlling shrinkage? Did shrinkage occur after washing or drying? CRITICAL QUESTION: Why did the shrinkage occur when it did?

TAC 75.83
TEXTILES AND APPAREL DESIGN
UNIT II

COMPETENCY: (p.2) *Concepts related to the textile and apparel design industries.*

SUB-COMPETENCIES:

(A) *Discuss the history of apparel design and manufacturing.*

(B) *Relate the world economy to the textile and apparel design industries.*

(C) *Outline the organizational structure of an apparel manufacturing company.*

CONCEPTS

II. Textile and apparel design industries
  A. History
    1. Apparel design

LEARNING AND EVALUATION EXPERIENCES

Have the students use references to find illustrations of and information about fabrics and garments worn throughout history. Instruct the students to make specific reference to the dress of Egyptian, Indian, North American Indian, Asian Indian, and pre-Colombian civilizations in Central and South America. Display the illustrations on a classroom bulletin board. KEY QUESTIONS: How has clothing style and construction evolved? What clothing items are currently fashionable that evolved from an earlier time period? How were the first animal skin articles of clothing constructed? CRITICAL QUESTIONS: How has the use of silk in clothing manufacturing evolved? How did the process of tanning hides develop?[B]

Lead a class discussion regarding the history of the apparel design industry. Summarize information about the historical evolution of apparel design and the countries that have greatly influenced apparel design. Also discuss influential people in the design industry. After important people and events have been identified, instruct the students to gather additional information about people and events that have influenced the design industry. Have students use the information in short oral reports. KEY QUESTIONS: What is the definition for couture? couturier? couturiere? Why did France become the world center of fashion during the days of Louis XIV? In what ways did Charles Worth influence the apparel design industry? How did Napoleon and his wife Josephine influence fashion design during the time of the French Revolution? How have the London tailors of Seville Row influenced apparel design for men? CRITICAL QUESTION: How does the apparel design process of previous years compare with the process used today?[B] [C]

[B] = Basic Skill Reinforcement

[C] = Common Essential Element

Lead students to brainstorm and identify various common ethnic backgrounds found in the country, region, and local community. Instruct students to locate and display photographs and garments that represent the various cultural backgrounds identified. Lead a class discussion regarding the influence specific cultures have on apparel design and consumer acceptance of specific designs. KEY QUESTIONS: How has dress in the country, region, and local community been influenced by other cultures? How has traditional clothing been adapted to reflect the influence of other cultures?

Lead a class discussion regarding how improved communication methods and increased mobility have influenced people to adopt clothing designs that originated in other cultures. Show illustrations of clothing items that have been worn in the United States but originated in other cultures. Ask the students to name additional clothing items Americans have worn that were influenced by apparel design in other countries.

Use Teaching Aid 17, Styles and Silhouettes, to illustrate styles that have been repeated throughout history. Divide the class into groups and instruct each group to find pictures of historic men's, women's, and children's costumes. Ask the groups to compare the historical illustrations with pictures of twentieth century fashions. Point out similarities in hats, collars, sleeves, hemlines, waistlines, basic styles, trims, and silhouettes. Ask student volunteers to create a display showing the historical evolution of design characteristics. KEY QUESTIONS: What is the definition of style? What is the definition of fashion? What design characteristics make a specific design a classic? What is a classic design? CRITICAL QUESTIONS: Why do some styles continue to be repeated throughout history? Will any basic design styles become outdated in the future? Why?[C]

Have students trace the introduction and use of fibers for fashionable fabrics throughout history. Encourage students to focus on fiber availability and versatility. Lead a class discussion in which students share their information with the class. KEY QUESTIONS: How does the availability of fibers affect the types of fashion developed? How has the greater versatility of new fabrics influenced fashion?[B]

Instruct students to research the history of fabrics and then have the students survey their homes and classrooms to identify fibers and fabrics that were not available twenty years ago. Ask volunteers to share their information with the class. KEY QUESTIONS: What fibers and fabrics were used before "new" fibers and fabrics became available? What advantages and disadvantages do the new fibers have? How has recent fiber development affected individuals and families?[C]

2. Apparel manufacturing

Review the time period and major events of the Industrial Revolution. Have the students read selected references to learn about the impact of the Industrial Revolution on apparel manufacturing and the availability of fashion dress. Ask the students to share their research findings in class. KEY QUESTIONS: What inventions most influenced the apparel manufacturing industry? What happens to a country's economy when industrialization occurs? How did mass production affect apparel manufacturing? Where were America's first textile centers? Why did the textile industry eventually move to the southern part of the United States? What role did immigrants play in the United States apparel manufacturing industry?[B]

Display several marking tools and pieces of measuring equipment. Allow the students to select tools that are of interest to them. Instruct students to research the tools' development and impact on apparel manufacturing history. Provide enough class time for the students to present their information in short oral reports.[B]

Have the students develop a time line about apparel manufacture and design from the time of the cave dwellers to the present. Allow the students to use Teaching Aid 18, Historic Clothing, as an information guide. KEY QUESTIONS: What factors influenced the change in the way garments are designed? What factors influenced the development of woven fabrics? What factors influenced the development of the apparel industry? the textile industry?

Display Teaching Aid 19, History of Textile Manufacturing, and lead a class discussion on the three stages in the history of textile manufacturing. Emphasize textiles developed for apparel. Encourage students to suggest examples of textiles developed during each of the manufacturing stages. KEY QUESTION: Which manufacturing stages still exist? CRITICAL QUESTION: How far into the future will fiber production, research, and development continue?

Lead students to brainstorm and identify a variety of merchandise that is currently designed and produced in the apparel industry. Tell the students to compare the quality, quantity, and variety of merchandise currently available with that of merchandise advertised in magazines and newspapers twenty, thirty, forty, and fifty years ago. KEY QUESTION: What apparel manufacturing equipment and processes have resulted in increased variety and quantity? CRITICAL QUESTION: Why is there a larger quantity of apparel available today than in the past?

Divide the class into three groups. Assign a fiber generation to each group. Instruct each group to research selected references and gather information about the history of their fiber generation and how the fiber development has influenced apparel design and manufacturing. Have each group present their information to the class in a detailed oral report that utilizes a variety of visual aids. KEY QUESTIONS: What is a first generation fiber? How do second generation fibers differ from first generation fibers? What are three ways of making third generation fibers?

Instruct students to bring old family pictures, old magazines (five or more years old), and old school annuals to class. Have the students categorize the pictures by year and then guide them in determining the periods of style (20s, 50s, postwar). Instruct the students to write short explanations about how and why the fashions pictured were developed and manufactured. Ask volunteers to create a display using the collected pictures.[B] [C]

B. Textiles, apparel design, and the world economy

Instruct students to define *domestic goods* and *imported goods*. Lead students to brainstorm and list domestic and imported goods. Tell the students to examine the labels of their clothing to determine if their clothes are domestic or imported. Use the students' information in a class discussion about the impact of imported apparel on the economy. KEY QUESTIONS: How can consumers identify where products were made? Do most consumers know where their garments were made? Why? CRITICAL QUESTION: Does knowledge of where garments are produced influence consumer purchase decisions? Why?

Instruct students to use current fashion magazines and local newspaper ads to find pictures of current fashions that reflect the design influence of other countries and cultures. Have the students determine if the source of the design and textiles is domestic or foreign. Have the students create domestic and foreign fashion displays using the pictures.

Using Teaching Aid 20, Origin of Textile Products, have the students examine the hang tags of garments and home furnishings to determine where the fabrics were manufactured. Students should also determine where the garments and home furnishings were assembled. KEY QUESTIONS: Where were the textiles manufactured? Where were the textiles assembled? If the fabrics were imported, what countries were the most frequent source of imports?

Have students use Teaching Aid 21, Home Inventory, to conduct a survey of the apparel and fabric items in their homes. Tell the students to identify the country of origin of each item and then classify the country as a developed or developing (Third World) country. KEY QUESTIONS: What are Third World countries? Why are developing countries called Third World countries? Why are Third World countries a primary source of imported clothing? What resources do Third World countries have that industrialized nations do not have?

Have the students examine mail-order catalogs and find information about apparel producing countries. Instruct the students to compare the information with magazine advertisements. KEY QUESTIONS: Which type of publication identifies the country of origin of apparel items? Why? Which apparel is more expensive, domestic or imported? Why?[B]

Have the students read selected references to learn about the economic impact of imports and exports on the domestic economy. Have students develop a vocabulary list of words related to the textile and apparel industry and international trade. The list should include the following terms: import duties, production package, offshore assemble, quotas, middlemen, balance of trade, imports, domestic market, exports, cut, make, and trim.[B]

Show the students examples of television commercials, magazine and newspaper advertisements, or trade publications that emphasize the concept of "buy American." Instruct the students to write short essays about the effects of and reasons for supporting the "buy American" philosophy. KEY QUESTIONS: Why are domestic apparel products labeled "Made in the USA"? Why are manufacturers encouraging consumers to purchase American made products?[B]

Invite a buyer from a merchandising establishment to speak to the class about the difficulties encountered when selecting merchandise for retail sale. Ask the speaker to concentrate on selection, variety, and competitive pricing. Also ask the speaker to discuss the "knock off" concept. Have the students prepare questions to ask the speaker.

Divide the class into two groups to debate one of the following statements:

1) American consumers should purchase only American made goods to reduce the federal trade deficit.
2) A free market economy will stimulate the fashion and textile industry.

Provide ample class time for the students to research their topics.[B] [C]

Have students read selected references and gather information about other industries that the clothing industry is dependent upon. Have each student write a summary about two of the selected references. KEY QUESTIONS: What happens when one industry has a slowdown? a price hike? a worker strike? CRITICAL QUESTIONS: How do industries benefit from one another? How can one industry help another during a time of need?[B]

C. Organizational structure of an apparel manufacturing company

Invite a representative from an apparel manufacturing company to visit the class. Ask the speaker to explain organizational structure and the reasons for developing and utilizing one particular structure. Instruct students to develop questions to ask the speaker.

Instruct students to read selected references and identify various types of apparel manufacturing processes. Lead a class discussion regarding current manufacturing processes. Compare companies that manufacture women's, men's, and children's apparel with companies that manufacture textiles for the upholstery industry.[B]

Divide the class into two teams and instruct the teams to formally debate the following statement: "Unions have a positive impact on the apparel manufacturing industry." Provide class time for students to visit the school library and gather facts to support their arguments.[B]

Lead a class discussion regarding the differences in custom made and assembly line methods of construction. Encourage the students to discuss ways in which companies select one processing method over another. KEY QUESTIONS: What are the advantages and disadvantages of each processing method? Why is one method chosen over another? CRITICAL QUESTIONS: Will both processing methods result in the same quality and product price? Why?

Divide the class into groups. Write common types of apparel manufacturing organization on note cards. Allow each group to select a note card. Common forms of apparel manufacturing organization include the following:

1) Private
2) Public
3) ESOPs (Employee Stock Ownership Plans)
4) Industrial relations plans
5) Scanlon plans
6) Quality circle systems

Instruct each group to research their assigned organizational structure and present their information to the class in a detailed oral presentation. KEY QUESTION: What are the advantages and disadvantages of each organizational structure? CRITICAL QUESTION: Why are some apparel manufacturing companies placing increased value and importance on employee participation and incentive programs?[B] [C]

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TEXTILES AND APPAREL DESIGN
UNIT III

COMPETENCY: (p.3) *Concepts related to textile selection, use, and care.*

SUB-COMPETENCIES:

(A) *Summarize textile applications in domestic, business, and industry.*

(B) *Analyze textile suitability for specific uses and validity of manufacturer's claims.*

(C) *Determine care of textile products.*

CONCEPTS

III. Textile selection, use and care
   A. Textile application
      1. Domestic settings

LEARNING AND EVALUATION EXPERIENCES

Lead students to brainstorm and list domestic uses of textiles. Domestic uses of textiles include covering, warmth, adornment, and status. KEY QUESTIONS: How are textiles used in domestic settings? Which of these uses is most important to your family? to you personally? CRITICAL QUESTION: How would life change if only one fabric existed?

Divide the class into groups. Have each group develop a list of textiles that they use daily. Instruct the groups to select group leaders and recorders. Have the groups display their lists on the chalkboard or on poster boards. Ask the groups to compare their lists. KEY QUESTIONS: How are textiles used by your families at home? What textile products do individuals use when they sleep, bathe, dress, eat, clean, and socialize? CRITICAL QUESTION: How are people's lives influenced by the presence of textiles?[C]

Lead a class discussion on consumer products made from textiles. Examples include strings for tea bags, dental floss, filament/strapping tape, makeup applicators, cotton swabs, cotton balls, Velcro®, and food packaging. Lead students to brainstorm to identify other examples.

Divide the class into two teams to debate the following statement: "Quality of clothing is directly reflected in the cost of clothing." To aid the discussion, have the students examine the construction of their own clothing. Students should note finishing touches and overall appearance. KEY QUESTIONS: Does the cost of a garment reflect the quality of a garment? Why? Are clothes often overpriced? Why? How often are garments worn? How long are

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[B] = Basic Skill Reinforcement

[C] = Common Essential Element

garments worn? Does the knowledge that a garment is a fad or a classic style influence a consumer's purchase decisions? Why?[B] [C]

Have students read selected references and identify general guidelines to follow when shopping for fabric or apparel. Guidelines include the following:

1) Avoid buying on impulse or spending more than budgeted.
2) Try on garments before purchasing. Sit, reach, and bend while wearing each garment.
3) Become familiar with brand names.
4) Read care labels.
5) Check all points of the garment for good workmanship.

Instruct each student to list three additional shopping guidelines on a sheet of paper. Lead a class discussion on the lists.[B]

Divide the class into groups. Have each group identify standards for selection of apparel. Each group should choose a leader and a recorder. Instruct the recorders to write the standards on posters and instruct the leaders to explain the posters to the class. Selection standards include the following:

1) Grainlines should be straight.
2) Linings and interfacings should require the same kind of cleaning as the outer fabric of a garment.
3) Zippers and other fasteners should open and close easily.

KEY QUESTION: What circumstances justify accepting lower standards?[C]

Invite a local alterations person to class to demonstrate procedures for fitting ready-made garments. Have the students prepare questions to ask the speaker. KEY QUESTIONS: How does an individual decide if a garment can be altered? What garment features might make alterations too difficult or impossible? How do narrow hems and seams or cut-in notches affect garment alteration? How does an individual's ability to alter ready-made garments influence shopping decisions?

Have the students compare the cost of buying a ready-made garment with the cost of making a similar garment. Students should consider the cost of material, patterns, notions, and time. KEY QUESTIONS: Which method of acquiring new clothing is most feasible? Why?[B]

Make arrangements for a class field trip to a local mall or other area where several stores with different clothing price ranges can be found. Have the students examine similar types of items in a designer or high-fashion store, a moderately priced store, and a budget or thrift store. Have the students compare the cost of the items, construction details, and services offered by each type of store. Ask volunteers to share their findings with the class. KEY QUESTIONS: What price ranges were identified for each type of store surveyed? How do the services offered by a store affect the price of goods sold there?[B] [C]

2. Business settings

Instruct students to research the use of textiles in business settings. Uses of textiles include carpeting, floor covering, wall covering, silk plants, awnings, insulation, and uniforms. KEY QUESTIONS: Is textile use in business different from textile use in the home? If so, how? What are some common textiles used in businesses?[B]

Lead students to brainstorm and list businesses that use disposable textile products. Have the students research the reasons for using disposable textiles. Allow volunteers to share their research information with the class. KEY QUESTIONS: What needs led to the development of disposable textiles? How does the use of disposable textiles affect time, energy, budgets, and employee morale? CRITICAL QUESTION: What is the ecological effect of disposable textile use?[B]

3. Industrial settings

Lead students to brainstorm and identify occupations that require uniforms made from specially engineered textiles. Occupations include race car driver, deep sea diver, and astronaut. Instruct each student to select an occupation from the brainstorm list and write a short paper explaining specific textile characteristics required in the uniform. Compile the papers into a classroom reference booklet.[B]

Display visual aids that illustrate industries that develop textiles for various uses. Examples include the space industry, petroleum industry, and chemical manufacturers. Have the students research selected resources and compile a list of textiles that were developed as a result of the identified industries. In addition, have students locate company names and addresses. Volunteers may write companies and request information on textile products. KEY QUESTIONS: How have the textiles developed for space exploration affected society? How has the petroleum industry contributed to textile development? What other industries develop or utilize textiles? What are geotextiles? What contributions do geotextiles make to the transportation system?[B]

Lead a class discussion on uses of textiles in industrial settings. Examples include belts, gaskets, and hoses used in factories; liners for highways and reservoirs; communications satellites; and fabric roofs on sports arenas. KEY QUESTIONS: How do industrial uses of textiles differ from domestic uses of textiles? business uses?

Divide the class into small groups. Instruct each group to examine either a school bus, a pickup truck, or a car. During the examinations, the groups should try to locate as many uses of textiles as possible. Examples include seat belts, soft ceilings, insulation, filters, upholstery, tires, belts, and hoses. Have the groups record and share their information with the class. KEY QUESTIONS: How does the use of textiles affect sound, comfort, and safety of automobiles? trains? planes? boats?[B] [C]

Invite a fire fighter, a safety officer from a utility company or an industrial firm, a medical technician, a registered nurse, or an agricultural specialist to speak to the class. Ask the speaker to describe how textiles are used in his or her field of work. Instruct students to prepare questions to ask the speaker. KEY QUESTIONS: What industrial textile developments are used in domestic settings? How have new textile technological developments increased job safety?

B. Textile suitability
   1. Textile standards

Have students identify groups that establish standards for the textile industry. Lead a class discussion regarding the types of standards the groups set. Ask the students to brainstorm and list ways that standards control textile quality. KEY QUESTION: How do industry standards affect textile quality? CRITICAL QUESTION: How would life change if there were no textile standards?

Instruct the students to identify groups that impose established standards on textile manufacturers. Have the students obtain information about the groups and determine what their textile standards are. Ask the students to report their findings to the class. Lead a class discussion regarding the importance of regulations and the reasons why groups establish standards. KEY QUESTIONS: What specifications have been established for textiles used by consumers? What group established the regulations? What kind of regulations has the Department of Defense established for textiles used by the military?[B]

Invite an architect, commercial interior designer, or builder to speak about standards and specifications for textiles used in commercial interiors. Ask the speaker to discuss standards for carpets, draperies, hard floor coverings, upholstery, and other textiles. Instruct each student to write a summary paragraph about the information presented.[B]

Have the students read selected references containing information about the function of the Consumer Product Safety Act of 1972 and the Consumer Product Safety Commission. Instruct students to write short papers explaining how the Consumer Product Safety Act of 1972 and the Consumer Product Safety Commission control products sold by the apparel and textile industry. CRITICAL QUESTION: What would happen if the Consumer Product Safety Act and the Consumer Product Safety Commission ceased to exist?[B]

Instruct the students to read selected references and make lists of textile standards consumers expect textiles to have. Lead a class discussion regarding the types of textiles that must meet the listed standards. KEY QUESTIONS: Which textile products are advertised as durable? stain resistant? flame retardant? flame proof? colorfast?[B]

Have the students evaluate advertisements and determine what consumers should expect from domestic and apparel textiles in terms of durability, wear, stain resistance, and colorfastness. KEY QUESTIONS: What claims do advertisers make that reflect product standards? How do consumers know if a product meets industry standards?[B]

2. Textile testing

Allow students to test children's sleepwear for flame retardant capability. KEY QUESTIONS: How do flame retardant fabrics differ from other fabrics? Of what value is the flame retardant quality?

Ask the students to collect magazine advertisements for stain repellent carpet. Obtain samples of stain repellent carpet from a carpet dealer and allow the students to conduct tests to determine the effectiveness of the manufacturer's claims. Instruct students to stain the carpet samples with grape juice, jelly, soft drinks, and mud. Have the students remove the stains and compare the carpet samples with carpet samples that were not stained. KEY QUESTIONS: Did stains come out of the carpet just as the advertisements claimed? Which stains are the most difficult to remove? Why? What is the difference in the cost of stain repellent carpet and regular carpet? How can consumers determine which type of carpet is the best buy?

Have the students perform research to identify textile performance capabilities. List the capabilities on the chalkboard. Divide the class into groups. Instruct each group to conduct textile performance tests on ten different textiles. Encourage the groups to test for strength, elasticity, shrinkage, etc. Ask the groups to share their findings with the class.[C]

Divide the class into groups. Instruct the groups to brainstorm and develop descriptions of new textile products that require textile content labels. Have each group share its description with the class. Groups should document their reasons for textile choice and use.[B]

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3. Consumer rights and responsibilities	Using Teaching Aid 22, Consumer Rights, lead a class discussion about the importance of rights and how they affect the consumer. Have the students work in groups to write role play scripts about consumer rights. KEY QUESTIONS: What rights do consumers have when they purchase textile products? How do textile purchase rights differ from other product purchase rights?[B]

Lead a class discussion to identify consumer responsibilities. Discuss the relationship between consumer rights and responsibilities. Display Teaching Aid 23, Consumer Responsibilities. KEY QUESTIONS: What consumer role do manufacturers play? What rights and responsibilities do manufacturers have? What responsibilities do consumers have when purchasing textile products?

Lead a class discussion regarding the following five factors that influence a consumer's decision to purchase a product: appearance, comfort, cost, maintenance, and durability. Have the students create short comic strips that illustrate consumer decisions a teenager makes when purchasing apparel or fabrics. KEY QUESTIONS: Which factors are most important to teenagers? Which factors are most important to adults? What consumer rights and responsibilities do teenagers have? CRITICAL QUESTION: Why do teenagers and adults frequently value different factors?[B]

Have the students work in groups to identify procedures consumers should follow when clothing items do not meet expected standards. Lead a class discussion during which students list valid reasons for returning merchandise. KEY QUESTIONS: When should consumers return clothing items? What documentation should consumers provide when returning clothing items?[C]

Display Teaching Aid 24, Guidelines for Making Effective Consumer Complaints. Lead a class discussion regarding the proper process to follow when lodging a complaint. Show students Teaching Aid 25, Letter of Complaint. Point out the effective points of the letter. Instruct the students to write letters of complaint following the example on the teaching aid. KEY QUESTIONS: What information should be included in a complaint letter? What information should not be included in a complaint letter? Why? CRITICAL QUESTION: Why is it important to write complaint letters promptly?[B]

Have the students interview business representatives about the types of complaints they receive. Have the students share their findings with the class. Lead a class discussion regarding complaints that may be caused by a lack of responsibility either on the part of the manufacturer or on the part of the consumer. KEY

QUESTIONS: How are manufacturers influenced by consumer complaints? How are consumers influenced by publicized complaints? How do manufacturers generally respond to consumer complaints?

C. Care of textile products
  1. Apparel
    a. Laundry

Lead a class discussion regarding the importance of proper garment care. Have the students develop files or loose-leaf notebooks that contain information about their own apparel items. Students should include information on fiber content and maintenance of each garment. Suggest that the students revise the files or notebooks periodically so they will have up-to-date care and cleaning references.[B]

Present an illustrated lecture explaining methods used to care for textile products. Include examples of cleaning products, cleaning procedures, and safety precautions. Divide the class into small groups and assign each group an aspect of textile care such as care labels, cleaning procedures, or cleaning products. Instruct each group to create a poster showing examples and giving an explanation of the assigned aspect of textile care. Have each group present its poster to the class.[C]

Instruct the students to use references to identify care information the law requires on textile labels. Have the students examine garment care labels in order to determine what type of care is required. Have students refer to Teaching Aid 26, Interpreting Care Labels. Instruct the students to compare care information required by law with information that appears on the labels.[B]

Distribute garment care labels and care information found on fabric bolts. Have the students read the label information and determine the appropriate fabric cleaning procedures. Ask two student volunteers to lead a class discussion about the label instructions. KEY QUESTIONS: What information is included on a care label? What do the care label symbols mean?[B] [C]

Have students read selected references to gain an understanding of factors that influence the care required for different garments. Instruct students to record information about the roles fiber content, fabric construction, fabric finishes, garment construction, and available care facilities play in the care of garments. Have the students examine different types of garments to learn about the effects fiber content and finishes have on care label instructions. Instruct students to examine the care labels in each garment. Lead a class discussion on the students' findings. KEY QUESTIONS: How does the care of a fiber blend differ from the care of a pure fiber? Which types of fibers require gentle care? Which fiber types are the most durable?[B]

Have the students work in pairs to design labels that provide consumers with information about the use and care of fabric. Students should design the labels so that special groups of consumers, such as elderly, non-English speaking, and vision impaired, will be able to understand the directions. Display the labels in the classroom.[B]

Have the students visit a store that sells laundry care products. Instruct the students to use Teaching Aid 27, Laundry Products, to list the names, categories, uses, sizes, and prices of a variety of laundry products. Tell the students to place the products into the following categories: detergent, soap, chlorine bleach, nonchlorine bleach, water softener, fabric softener for use in the washer, fabric softener for use in the dryer, and stain remover. KEY QUESTIONS: What is the difference between detergent and soap? What is the difference between chlorine bleach and nonchlorine bleach? Which fabric softeners are easiest to use? Which fabric softeners are most effective? How do spot and stain removers work? CRITICAL QUESTION: How should individuals determine which laundry products to use?[B]

As a Student Occupational Activity, have students test various laundry products for their ability to remove soil and stain from fabric samples. Provide the students with fourteen squares of cotton/polyester fabric. Instruct the students to stain seven of the fabric samples with greasy soil and seven with earth soil. Instruct the students to launder one of each type of fabric sample using each of the following methods:

1) Homemade lye soap
2) High phosphate detergent with no bleach
3) Low phosphate detergent with no bleach
4) High phosphate detergent with bleach
5) Low phosphate detergent with bleach
6) Any type of detergent with fabric softener added in the wash
7) Any type of detergent with fabric softener added in the dryer

Encourage students to compare their results in class. NOTE: Remind the students to label each sample with a laundry marker.

Have the students research the history of apparel cleaning products. Students should obtain information about the cleaning products' ingredients and effects on health. Have the students share their findings with the class.[B]

Allow the students to practice removing stains from fabrics. Divide the class into small groups and give each group several fabric samples. Instruct each group to stain the samples with a variety of products. Have the groups refer to stain removal charts to determine which stain removal technique should be used. Ask each group to share its results with the class.

Show students Teaching Aid 28, The Washing Process. Lead a class discussion regarding procedures for prewashing, soaking, sorting, pretreating, rinsing, and spinning. Stress the differences between hand washing and machine washing. KEY QUESTIONS: How does a washing machine clean clothes? How does hand washing differ from machine washing? CRITICAL QUESTION: What impact does laundering have on the life of a garment?

Arrange a class visit to an appliance department or store to view several types of home laundry appliances. Point out specific features of the appliances. Features include top loading and front loading washing machines, energy efficient machines, and space saving designs. KEY QUESTIONS: How do energy efficient appliances affect family budgets? Why are space saving designs necessary? CRITICAL QUESTION: How will future textile technological developments affect the design of home laundry appliances?

b. Dry cleaning

Arrange a field trip to a commercial dry cleaning establishment. Ask the tour guide to discuss the equipment, the operating procedures, the products used, and the limitations of dry cleaning processes. If a tour is not possible, visit the establishment and videotape a tour for classroom presentation. Instruct students to write short papers comparing dry cleaning with home apparel cleaning methods.[B]

Obtain samples of cleaning fluids used in full-service and self-service dry cleaning establishments. Ask a school chemistry teacher to help the students determine the composition of both solutions. KEY QUESTIONS: What do the cleaning fluids contain? Do the solutions contain the same chemicals? What action causes soil removal?

Have students compare the prices of dry cleaning garments at full-service and self-service dry cleaning establishments. Instruct students to calculate the cost of cleaning a dress, a shirt, a sweater, and a jacket for one year. Have students compare the dry cleaning costs to estimated laundry costs. NOTE: Estimated laundry costs appear in numerous consumer and government publications.[B]

Invite a representative from a dry cleaning establishment to speak to the class regarding the method of preserving clothing for storage. Have students prepare questions to ask the speaker. After the presentation, instruct the students to write short paragraphs summarizing the information presented.[B]

2. Household products

Show students Teaching Aid 29, Household Textile Fiber Contents, and lead a class discussion regarding consumer fabric content preferences. Include in the discussion factors that influence consumers' purchase decisions. Factors include care, cost, durability, and aesthetic characteristics. KEY QUESTIONS: Which fiber blends are the most appealing to consumers? Which manufactured fiber is most often blended into household textiles? CRITICAL QUESTION: How do consumers measure household textile quality?

Instruct students to read selected references to learn about the care of household textiles such as carpets, upholstery, wall coverings, draperies, and linens. Have the students examine labels on new products and locate the manufacturers' use and care information. KEY QUESTIONS: How is household textile care different than garment textile care? How do care labels and fiber content labels differ? CRITICAL QUESTION: Why is it important to keep files that contain current household textile care information?

Invite a commercial carpet cleaner to speak to the class about techniques for cleaning home furnishings. Have the students prepare questions to ask the speaker. Instruct the students to write short paragraphs summarizing the information presented.[B]

Arrange a field trip to a commercial janitorial supply house. Instruct the students to compare industrial cleaning supplies to domestic cleaning supplies. Have the students calculate the cost differences. Students may use information from Teaching Aid 30, Laundry Products, as a resource when comparing the industrial and domestic supplies.[B]

Provide the students with samples of industrial and domestic cleaning supplies. Instruct the students to clean classroom and school carpets, upholstered furniture, lamp shades, and other accessories. Tell the students to write short paragraphs that indicate which products are most effective in terms of cleaning, cost, and time.[B]

TAC 75.83
TEXTILES AND APPAREL DESIGN
UNIT IV

COMPETENCY: (p.4) *Concepts and skills related to regulations upon textiles and apparel design industry.*

SUB-COMPETENCIES:

(A) *Identify federal legislation regulating fabric and fashion design.*

(B) *Summarize how governmental agencies affect the textile and fashion industries.*

(C) *Identify the assets and liabilities of finishes.*

(D) *Outline the effects of various environmental conditions on textiles.*

CONCEPTS

IV. Textile and apparel design industry regulations
   A. Federal legislation regulating fabric and fashion design

LEARNING AND EVALUATION EXPERIENCES

Lead a class discussion regarding the Textile Fibers Product Identification Act of 1960. KEY QUESTIONS: What fiber information must appear on the labels of end products? What is the difference between a generic name and a trademark? What is the registered trademark symbol? What trade names may be used to describe generic products?

Have the students read resources and identify federal legislation that has made an impact on the textile and apparel design industries. Lead a class discussion regarding the reasons for the legislation. Include in the discussion descriptions of incidents that prompted the legislation. KEY QUESTIONS: How does federal legislation protect consumers? producers? manufacturers? merchants?[B]

Display Teaching Aid 31, Textile Fiber Products Identification Act, and lead a class discussion about the act and its purpose. KEY QUESTIONS: Why is the generic name of a fiber more important than its trade name? Why is the country of origin important consumer information?

Have the students examine labels from textile products and determine if they are in compliance with the Textile Fiber Products Identification Act. Instruct the students to look at the labels and locate the following information:

1) Generic fiber names

[B] = Basic Skill Reinforcement

[C] = Common Essential Element

2) Fiber trade names
3) Manufacturer names
4) Trademarks or identification numbers
5) Misleading names

Have the students correct any wrong or misleading label information. KEY QUESTIONS: Why is it important for the correct information to appear on a product label? What rights do consumers have concerning label information?[B]

Display Teaching Aid 32, Wool Products Labeling Act, and lead a class discussion about the need for the act. Also explain why wool fiber distinctions must be made. KEY QUESTIONS: What is the difference between wool and recycled wool? When may the terms "new wool" or "virgin wool" be used? How is recycled wool made? Why must manufacturers identify the country of origin on apparel labels?

Have the students examine labels on wool products. Instruct the students to locate the Woolmark and compare the information on the Woolmark to the information on the label. KEY QUESTIONS: What types of products use recycled wool? What type of wool is most commonly used? How does the wool used for garments differ from the wool used for other textile items?[B]

Display Teaching Aid 33, Fur Products Labeling Act. Lead a class discussion on the implications of the act and the historical reasons for the act. KEY QUESTIONS: What is the difference between fur and fiber? Why are there small quantities of fur fibers used in the production of textiles? What is the difference between waste fur and used fur? What consumer rights are implied by the Fur Products Labeling Act? CRITICAL QUESTION: Why are fur industry critics outspoken about using fur for clothing?

Show students Teaching Aid 34, Flammable Fabrics Act. Lead a class discussion about the implications of the act and the reasons for its creation. KEY QUESTIONS: Which garments and fabrics must meet the criteria of the Flammable Fabrics Act? Which home furnishing items are under the control of the Flammable Fabrics Act? What problems have apparel manufacturers experienced in complying with the Flammable Fabrics Act? What controversies has the Flammable Fabrics Act caused?

Have the students locate articles about children and adults who have been burned as a result of wearing flammable clothing or who have been overcome by toxic fumes produced by burning fabrics. Instruct students to present their information to the class in the form of oral reports. KEY QUESTIONS: How could the incidents have been prevented? Can legislation minimize fabric flammability incidents? How?[B]

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Provide the students with copies of trade journal or consumer magazine articles about Tris. Define *Tris* as a flame-retardant fabric finish widely used in the late 1960s and early 1970s. Tris was reported to be a carcinogen (a substance that tends to produce cancer) and was removed from the market. Lead a class discussion and allow students to offer their opinions about Tris. KEY QUESTIONS: What should have been done with fabrics treated with Tris? How can consumers learn about fabric treatment hazards?[B]

Invite a fire fighter to speak to the class about the causes of home fires. Ask the fire fighter to discuss problems resulting from the use of flammable fabric in the home. Prepare students for the speaker's visit by helping them develop appropriate questions.

Have students investigate the advantages and disadvantages of using fiberglass as a drapery and upholstery textile. Instruct students to explain the information in short written reports. Collect the reports and place them in a classroom reference booklet. KEY QUESTION: Why is fiberglass used in place of other textiles?[B]

B. Effects of governmental agencies

Instruct the students to read selected references and compile lists of agencies that enforce regulations and requirements on the textile industry. Ask the students to share their lists with the class. Lead a class discussion regarding the protection organizations provide to workers and consumers.[B]

Invite a representative from the Occupational Safety and Health Administration (OSHA) to speak to the class about federal industrial regulations. Have the students prepare questions to ask the speaker. Instruct students to write paragraphs summarizing the information obtained during the presentation.[B]

Invite a representative from the Immigration and Naturalization Service (INS) to speak to the class about immigrant labor in the community, the region, and the country. Ask the speaker to include information about the effects of immigrant labor on textile and apparel employment pay rates. Have the students prepare questions to ask the speaker. Instruct the students to prepare short reports summarizing the presentation.[B]

Have the students locate information about the Consumer Products Safety Commission. Lead a class discussion regarding how the commission enforces legislation related to product safety. KEY QUESTIONS: What agency enforces product safety legislation? How? What rights are granted to consumers by the Consumer Products Safety Act of 1972? CRITICAL QUESTION: How would textile production differ if the Consumer Products Safety Commission did not exist?[B]

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Have the students write essays about what they believe the United States would be like if there were no federal laws and regulations to protect consumers in the marketplace. Instruct the students to cite specific laws, regulations, and agencies in their essays.[B]

C. Assets and liabilities of finishes
   1. Assets of finishes

Lead students to brainstorm and list types of fabric finishes. Fabric finishes include mercerizing, fulling, brushing, sizing, weighting, beetling, napping, and flocking. Instruct the students to identify the advantages of the finishes. KEY QUESTIONS: What are the most frequently used finishes? What fabric has had no finish applied? CRITICAL QUESTION: Why are some finishes permanent, some durable, and some only temporary?[B]

Allow each student to select ten fabric swatches with opaque and insulated finishes from a scrap box in the classroom. Instruct the students to mount the swatches on paper and list the advantages of each fabric and finish combination. KEY QUESTION: How should each fabric swatch be cleaned?[B]

Display large samples of cotton batiste and nylon fabrics that have been treated with softening finishes. Give students the opportunity to see and touch each fabric sample. Instruct each student to list reasons why textile finishers use softening agents. Lead a class discussion on the lists.[B]

Divide the class into small groups. Give each group a glass rod, a swatch of wool fabric, and several small pieces of paper. Instruct the groups to rub the glass rods with the wool fabric swatches and then hold the rods next to the paper edges. Tell the groups to record the results and choose leaders to explain the results to the class. KEY QUESTIONS: Why do textile finishers apply antistatic finishes to some fabrics? Which fabrics are most prone to static cling? Why?[B] [C]

Assign each student a fabric finish. Have each student prepare a research paper about the assigned finish. Each paper should include information about processes for applying the finish, effects of the finish, manufacturer and consumer costs, uses of the finish, and legislation related to the finish. Stress that the papers must include information about finish assets and liabilities.[B]

Divide the class into small groups and instruct each group to identify a recently developed fabric finish. Have each group prepare an oral presentation that explains the advantages and disadvantages of the new finish. Encourage the class members to ask the groups questions.[B] [C]

   2. Liabilities of finishes

Lead a class discussion regarding stain-resistant and spot-resistant finishes. Explain why it became necessary to develop soil-release finishes. Encourage the students to share personal stain removal experiences. KEY QUESTION: How do soil-release finishes differ from stain-resistant and spot-resistant finishes? CRITICAL QUESTION: How would consumers alter their garment purchase decisions if stain-resistant, spot-resistant, and soil-release finishes were not available?

Divide the class into small groups. Give each group one cup of warm water, one cup of dry cleaning solvent, and three swatches of highly starched net or woven cotton. Instruct each group to place one swatch in the warm water and one swatch in the dry cleaning solvent. Groups should set aside the third swatch. After one hour, tell the groups to remove the swatches and dry them. Instruct each group to mount all three swatches on poster board and record their observations. KEY QUESTION: How can individuals reapply sizing to garments?[B]

Display a large fabric sample with a napped finish and a large fabric sample with a brushed finish. Lead a class discussion regarding the differences in the two finishes. KEY QUESTIONS: What properties do the finishes give the fabrics? What are the fabric use limitations of napped finished and brushed finished fabrics? What special care must be given to napped finished and brushed finished fabrics?

Lead students to brainstorm and list problems consumers might experience if textile finishers overbleach fabrics, improperly heat set thermoplastic fabrics, and tenter garments off grain. If possible, display fabrics that illustrate the specific finishing mistakes.[B]

Contact a dry cleaner that reapplies sizing to fabrics and make arrangements for the students to observe the process during a class tour. Encourage students to ask questions during the tour. KEY QUESTION: What difficulties does a dry cleaner encounter when attempting to reapply sizing to garments?

Have students examine fabric samples finished by napped, blocked, burnt-out design, or plissé processes. Instruct the students to compare finished fabric samples with untreated fabric samples of similar weave and fiber content and describe the differences. KEY QUESTIONS: Did the finishes make the fabrics stronger or weaker? Why? Which fabric is most expensive? Why? Which fabric might cause the wearer to have an allergic reaction? Why? Which fabric has the greatest chance of causing cancer? Why?

D. Effects of environmental conditions on textiles

Have the students research and report the effects environmental conditions have on apparel items and textiles found in household, business, and industrial settings. Students should consider the effects of moisture, bacteria, sunlight, moths, bugs, soil, age, and pollution.

Have the students bring to class garments they wore when they were children. Display the items in the classroom and ask the students to describe how the fabric looked when it was new. Also ask the students to compare how the fabric looks now to how it looked when it was new. KEY QUESTIONS: How was the fabric cleaned? How was the fabric stored?

Lead a class discussion regarding the effects the textile industry has on the environment. Ask the students to offer their opinions about the measures taken by government agencies to protect the environment from the potential harmful effects of the textile industry. Also explain how the textile industry protects itself from changes in the natural and legislative environments. KEY QUESTIONS: What measures are taken when industries do not meet legislative requirements? What effect does legislation have on the textile industry? What measures does the textile industry take to save energy and to safeguard the environment?

Invite a museum representative or textile restoration expert to speak to the class regarding how historic textiles are protected from environmental hazards. Have the students identify and list textile items individuals generally want to preserve. CRITICAL QUESTION: Which garments should be preserved in order to show future generations examples of typical dress in the twentieth century?[B]

Divide the class into small groups and give each group one cup of salt water, one cup of chlorinated water, one cup of tap water, and three swatches of swimsuit fabric. Tell the groups to place one fabric swatch in each type of water. Allow the fabric swatches to soak for several days and instruct the groups to monitor and record changes in the color, texture, and elasticity of the fabric. Lead a class discussion on the effects of water on swimsuits. KEY QUESTIONS: Did the tap water cause any fabric changes? What changes did the salt water cause? What changes were caused by the chlorinated water?[B]

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TAC 75.83
TEXTILES AND APPAREL DESIGN
UNIT V

COMPETENCY: (p.5) *Concepts and skills related to design procedures.*

SUB-COMPETENCIES:

(A) *Identify tasks to be achieved in the design process.*

(B) *Determine factors which enhance design.*

(C) *Apply design elements and principles.*

(D) *Apply draping and flat pattern techniques.*

CONCEPTS

V. Design procedures
  A. Tasks in the design process
    1. Textile design

LEARNING AND EVALUATION EXPERIENCES

Have the students write hypotheses about how the fabrics they are wearing were designed. Students should note the texture, weave, and color aspects of the designs. Also have the students read selected references that explain the processes used to make designed fabrics from fibers. Lead a class discussion during which the students compare their hypotheses to fact.[B]

Instruct students to use selected resources to research the duplication of fabric designs throughout history. Have each student duplicate a design using colored paper, paints, or other mediums. Display the designs on a classroom bulletin board. KEY QUESTIONS: Which designs have been repeated throughout history? How have designs been modified? Which current fabric designs are modifications of previous fabric designs? Which historic designs have been stylized for use on modern fabrics, apparel, home furnishings, and jewelry?[B]

Instruct the students to use selected resources to research the development of fabric production. Allow the students to share their information with the class. Lead a class discussion on the development of fabric production. Instruct volunteers to create a flow chart on the chalkboard illustrating the development of fabric production. KEY QUESTION: What is the first step in fabric production?[B]

Have the students draw original fabric designs on paper. Students should include color, repetition, and texture in their designs. Instruct the students to suggest possible uses for their fabric designs. Display the designs throughout the classroom and lead a class discussion regarding textures used in fabrics. KEY

[B] = Basic Skill Reinforcement

[C] = Common Essential Element

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QUESTION: How important is it for all materials to have the same degree of durability and colorfastness?

Have the students use the block printing technique to develop fabric designs. Instruct the students to draw designs on paper and then carve their designs into potato halves or blocks of wood. Provide fabric paint and allow the students to create block print designs on scarves, T-shirts, or sweatshirts.

Make arrangements for the students to use a computer with design capabilities and allow the students to create designs suitable for fabrics. Instruct the students to title and print their designs. Have the students write short paragraphs describing how the designs should be used. KEY QUESTION: How can designs for fabric be created on a computer? CRITICAL QUESTION: What impact will computerized design have on the future of textile design?[B]

Invite a batik designer to demonstrate and explain the process to the class. Help the students develop appropriate questions to ask the speaker. After the presentation, instruct the students to write short paragraphs that explain the batik dying process.[B]

Invite a weaver or fabric designer to class or show a film on transforming ideas into finished fabrics. Have the students prepare questions to ask the speaker. Instruct students to write summaries of the presentation.[B]

2. Apparel design

Have the students examine the clothing in their wardrobes and look for evidence of cultural influence from other countries. Have the students bring clothing items to class and explain which cultures are reflected in them. Students should include information about garment fiber content and care instructions. KEY QUESTION: Which cultures appear to dominate clothing design the most? CRITICAL QUESTION: Why do designers adopt the motifs of other cultures?[B]

Invite a guest speaker who has visited, lived in, or studied other countries to give a presentation about traditions, customs, morals, and laws related to clothing worn by people in other countries. Have the students prepare questions to ask the speaker. Instruct students to write brief summaries of the presentation.[B]

Have the students conduct research to identify designs that have been duplicated throughout history. Students should look for silhouettes, skirt lengths, necklines, collars, and other standard designs. KEY QUESTIONS: Which designs have reappeared throughout history? How have designs been modified or stylized? CRITICAL QUESTION: Which designs are most likely to be modified in the future?[B]

Divide the class into small groups and have each group select a specific aspect of apparel design. Examples include hats, coats, collars, necklines, and skirt lengths. Instruct each group to thoroughly research the historical reoccurrence of its selected aspect of design. Have each group present their information to the class in an oral report.[B] [C]

Instruct students to read selected references in order to identify basic types of sleeves. Lead a class discussion regarding the advantages, disadvantages, maintenance, and effects of each sleeve type. Display examples of types of sleeves that have been worn throughout history. Have the students use newspapers, magazines, and pattern books to locate pictures of each type of sleeve. Instruct the students to mount the pictures on poster board and appropriately label them. Display the posters in the classroom. KEY QUESTIONS: Which sleeves appear to be the most comfortable? the easiest to care for? CRITICAL QUESTIONS: Which sleeve designs will be popular in the future? Why?[B]

Instruct the students to collect line drawings of garment details found in men's, women's, and children's clothing. The collections should include various styles of silhouettes, necklines, collars, sleeves, pants, shirts, pockets, cuffs, labels, shoulders, vents, and waistlines. Allow the students to create original designs and instruct them to indicate the influence of each detail. Display the original designs in the classroom. KEY QUESTIONS: Which design details are gender specific? which are not?

Have the students read selected references to gather information and define *fashion cycle*. Lead a class discussion during which the students review the terms trend, fad, and high fashion. Solicit student opinion about classics and recurring fashion cycles. Encourage the students to consider how classics and recurring fashion cycles relate to fashion trends, fads, and high fashion. KEY QUESTIONS: What is a fashion trend? a fashion fad? What is high fashion? CRITICAL QUESTIONS: Why do some trends recur more than others? When does a fad or trend become a fashion?[B]

Lead a class discussion during which the students define *draping*. Show the students examples of designs created by draping. Have students work in groups and use fabrics several yards long to create draping designs. Encourage the students to experiment with the fabric to see which designs work best. Ask the groups to write paragraphs comparing their results to magazine pictures of garments created by draping.[B]

Have the students compare the design qualities of designer patterns in commercial pattern books with patterns made for quick and easy construction. Allow the students to examine a designer flat pattern and a "quick and easy" pattern. Lead a class discussion comparing the pieces, markings, and complexity of the patterns. KEY QUESTIONS: What are the main differences in the patterns? What effect does the number of pattern pieces have on the complexity of a pattern? Which patterns are examples of classic styles? fads? high fashion?[B]

Invite a representative from the apparel manufacturing industry to speak to the class about the processes used to design and produce apparel. Instruct each student to write a summary of the presentation.[B]

B. Factors enhancing design
  1. Elements of design

Lead a class discussion on Teaching Aid 35, Elements of Design. Allow the students to use newspapers, magazines, and other periodicals to find examples of the elements of design.[C]

Have the students read selected references and define the following elements of design: *color*, *shape*, *line*, *space*, and *texture*. KEY QUESTIONS: How do each of the elements affect the way a garment looks on an individual? How do the elements affect a garment's silhouette?[B]

Invite the school art teacher to demonstrate how designs are created with line, shape, space, texture, and color. Give students the opportunity to experiment with the elements to see how they affect garment design. KEY QUESTIONS: What illusion do light colors give? How do vertical lines affect the look of a garment? Which textures or lines are slenderizing? Which shapes are slenderizing? Which colors make people appear larger?

Have the students write definitions for the following terms: *primary colors*, *secondary colors*, *intermediate colors*, *value*, *intensity*, *tint*, and *shape*. Ask the students to share their definitions with the class. Lead a class discussion comparing the students' definitions with reference book definitions. KEY QUESTIONS: Which colors help keep people cool in the summer? Why? Which colors help keep people warm in the winter? Why? How is the intensity of a color changed? How does the value and intensity of the color of a garment affect an individual's appearance? CRITICAL QUESTIONS: Is the coolness or warmth provided by a clothing item of a specific color psychological or physiological? Why?[B]

Secure several basic blouses and shirts in a variety of colors from a department store. Display the blouses and shirts in the classroom and have each student describe in writing how the same apparel produced in a variety of colors can create changes in mood, purpose, and appeal. KEY QUESTIONS: Which colors appear to be warm and friendly? Which colors appear to be professional? Which colors project a youthful image?[B]

Invite a color specialist to class to explain how personal colors are analyzed. Help the students develop appropriate questions to ask the speaker. KEY QUESTIONS: How does color enhance an individual's overall appearance? When does color detract from overall personal appearance?

Distribute different colors of paint to the students. Instruct students to paint squares of equal size on white paper. Lead a class discussion regarding the effects color has on an object's perceived size, height, and weight. KEY QUESTIONS: What color are the squares that appear to be the biggest? tallest? heaviest? Why?

Have students define *structural lines* and *decorative lines* as they relate to clothing. Instruct the students to use structural and decorative lines to draw designs that create illusions of height and width. KEY QUESTIONS: What is the purpose of structural lines? decorative lines? What designs create positive illusions in apparel? How do designs create positive illusions in apparel? CRITICAL QUESTION: Why do lines create optical illusions?

Instruct students to find pictures of clothing in which line is the predominant element of the design. Display the pictures and lead a class discussion regarding how lines are used to give illusions of height, formality, thinness, and softness.

Review silhouettes with the students and ask them to make a list of the most common silhouettes currently used in fashion. Lead a class discussion regarding how the shape or silhouette of a garment can camouflage or emphasize physical characteristics. KEY QUESTIONS: How do silhouettes create lines? What effect do silhouettes have on a person's appearance?

Have the students write self-evaluations of their figures and body types. Tell the students to look through magazines and find illustrations of apparel that create silhouettes that are most appropriate for them. Instruct the students to mount the silhouettes on paper and attach paragraphs that explain why the selected silhouettes are appropriate.[B]

Secure numerous fabrics of various textures. Pass the fabrics around the class and have the students describe (with single words) each fabric's texture. Ask the students to suggest uses for the fabrics based on the textures. KEY QUESTIONS: How does fabric texture affect the way a fabric is used? Do textured fabrics require special care? How does fabric texture affect a garment's appearance?[B]

Ask the students to describe the fabric textures they are wearing. Have volunteers list the descriptive words on the chalkboard. Lead a class discussion on appropriate garment fabric texture. KEY QUESTIONS: Which fabric texture would be most appropriate for garments worn to a football game? formal dance? picnic? bed? work? Why?[B]

2. Principles of design

Have the students read selected references and write definitions for the following principles of design: *balance*, *proportion*, *rhythm*, *emphasis*, and *harmony/unity*. Lead a class discussion regarding how creativity may be expressed by applying principles of design. Show the students Teaching Aid 36, Principles of Design.[B]

Display pictures or slides of famous paintings and instruct each student to evaluate how well the artist incorporated the principles of design. Tell students to view the paintings and identify the principles of balance, proportion, emphasis, rhythm, and harmony/unity. Ask volunteers to create a bulletin board display using magazine pictures that illustrate the principles of design. KEY QUESTIONS: Which principles of design most often dominate the paintings? Why?[B] [C]

Give each student a copy of Teaching Aid 37, Balance. Instruct each student to complete the teaching aid and look in magazines and find pictures of clothing illustrating examples of symmetrical and asymmetrical balance. KEY QUESTIONS: Which type of balance is most interesting? Which type of balance is the most formal?

Ask volunteers to demonstrate how jacket lengths and skirt/pant lengths look better when they are in proportion to an individual's figure. Female volunteers should be over 5'7" and under 5'2" and male volunteers should be over 6' and under 5'6". KEY QUESTIONS: When fashion dictates a certain style, how can it be adapted to complement all figure types? How can people dress in style and still keep the clothing in proportion to their shapes?[C]

Invite a fashion consultant to class to demonstrate how accessories are used to enhance appearance. Have the students bring accessories to class. Ask the consultant to show the students how to properly use the accessories. Instruct the students to be prepared to demonstrate use of an accessory item during the next class.

Provide the students with enough class time to complete Teaching Aid 38, Proportion. Ask volunteers to create a classroom display using the completed teaching aids. KEY QUESTION: What is the golden rule of proportion? CRITICAL QUESTION: Why has the rule withstood the test of time?[B] [C]

Have students complete Teaching Aid 39, Emphasis; Teaching Aid 40, Rhythm; and Teaching Aid 41, Harmony/Unity. Lead a class discussion on the students' answers. KEY QUESTION: When might people purchase items that are not "perfect" according to the elements and principles of design?[B]

Have students analyze their wardrobes and submit, in writing, five new ways to accessorize their apparel. The wardrobe analysis should include a personal figure and color analysis. Encourage volunteers to share their personal analyses with the class.[B] [C]

Allow the students to browse through commercial pattern books and magazines and locate pictures of apparel that illustrate rhythm flow through line, shape, color, or texture. Ask volunteers to make a display with the pictures, using one picture per example. CRITICAL QUESTION: How is rhythm flow usually depicted in clothing?[C]

Ask volunteers to bring harmonious apparel combinations from their wardrobes to class. Using a variety of accessories, demonstrate how accessories can disturb harmony. Instruct the class to analyze what is wrong with each combination and lead a class discussion during which possible solutions are identified. Also use a variety of accessories to illustrate how accessories can enhance apparel and personal appearance.[B] [C]

C. Applying design elements and principles

Allow each student to select an apparel accessory and adapt it to create a new design. Tell the students to come to class the next day wearing the adapted accessories. KEY QUESTIONS: How have the elements and principles of design been incorporated into the adapted accessories? Which elements and principles of design are the easiest to incorporate into accessory design? The most difficult? Why?

Have students look at pictures of basic patterns in pattern books, magazines, and newspapers. Lead students to brainstorm and generate ideas for modifying the patterns. Instruct the students to make sketches of the possible modifications. Have the students describe their sketched modifications in short oral presentations. Ask volunteers to use the sketches to create a classroom pattern display.[C]

Help the students apply the elements and principles of design to original garment designs. Display the designs in class and lead a class discussion regarding how the elements and principles of design were incorporated into the garment designs. Encourage the students to offer and accept constructive criticism regarding their garment designs. KEY QUESTIONS: Which types of garment designs illustrate balance? rhythm? harmony? Why?[C]

As an entrepreneurial project, have the class members design T-shirts or sweatshirts that promote FHA/HERO. Instruct the students to create designs and then help them market and sell the shirts to raise funds for FHA/HERO.[C]

Lead a class discussion regarding the following ideas for recycling garments:

1) Cut a new garment from an outdated garment.
2) Turn a sweatshirt into a warm-up jacket.
3) Use an old formal gown for linings, blouses, sportswear, or pillowcases.
4) Make a skirt from jeans.
5) Turn an old pair of jeans into a duffle bag.

Include in the discussion ways in which the elements and principles of design are applied when recycling garments. Lead students to brainstorm and list other garments that may be recycled. KEY QUESTION: Which types of garments are easily recycled into other items?

Have the students bring to class apparel items that are no longer used. Divide the class into small groups and have them use Teaching Aid 42, Should I Recycle This Garment?, to determine if and how their apparel items can be recycled. NOTE: If time permits, give the groups the opportunity to complete and sell the recycling projects to raise funds for a charity or student organization. KEY QUESTIONS: Will the recycled garments be fashionable? Will the recycled garments be useful? What principles and elements of design will be applied to the garments during the recycling process?[C]

D. Applying draping and flat pattern techniques
   1. Fitting a garment

Demonstrate fitting a garment. Allow the students to practice fitting techniques such as altering hemlines, adjusting darts, adjusting sleeve lengths, and adjusting waistbands. Instruct the students to prepare written summaries of the demonstration. Instruct the students to keep the summaries for future reference.[B]

Have the students read selected references and define the following terms: ***girth***, ***back length***, ***hem length***, ***standard body measurements***, ***inseam***, and ***sleeve length***. Instruct students to examine a variety of pattern envelopes (dress, skirt, pants, blouse, shirt). Lead a class discussion regarding how the information on the back of a pattern envelope is used as a fitting tool. KEY QUESTION: Which pattern pieces are used to determine specific measurements?[B]

Using a muslin shell for a bodice, demonstrate how to adjust the fit of the shell for a specific size. Also demonstrate how to transfer markings to paper in order to create a flat pattern. KEY QUESTIONS: What steps should be followed when creating a pattern using the draping technique? How much seam allowance should be added to the pattern's size? How are darts shown on a draping pattern?

Divide the class into groups of two. Instruct students to study Teaching Aid 43, Taking Body Measurements. Have the groups measure each other. Students should record the measurements for future reference. Lead a class discussion in which students compare their proportions to standard pattern proportions. KEY QUESTIONS: Why is it important to know standard pattern sizes? How can a pattern be altered to make it longer? shorter? larger in the hips? larger in the bust? How is ease accounted for? Where is ease accounted for? CRITICAL QUESTION: Why is it important to accurately take measurements before beginning a fabric project?

2. Supplies and equipment

Have the students read selected references and identify and define the uses of the following items: *tape measure*, *yardstick*, *gauge*, *shears*, *scissors*, *tracing wheel*, *dressmaker's carbon*, *tailor's chalk*, *ironing board*, *tailor's pressing ham*, *pins*, *hand needle*, *thimble*, *pin cushion*, *pinking shears*, *iron*, *seam ripper*, *point presser*, *sleeve board*, and *press cloth*. Exhibit the supplies and equipment on a bulletin board or in a display case. KEY QUESTION: What care and safety measures should be practiced when using each piece of equipment listed? CRITICAL QUESTION: Why is it important to use quality equipment?[B]

Instruct the students to use Teaching Aid 44, The Sewing Machine, to locate and define the functions of the following parts of a sewing machine: *balance wheel*, *spool pin*, *stitch regulator*, *thread take-up lever*, *bobbin*, *presser foot*, *feed*, *throat plate*, *slide plate*, and *needle*.

Demonstrate how to thread a sewing machine, adjust the tension, and regulate the bobbin. Also demonstrate stitching with proper and improper tension. Lead a class discussion regarding the effects of using improper sewing tension. NOTE: Teach machine threading theory to the students so that they can transfer their knowledge to a variety of sewing machines. KEY QUESTIONS: What adjustment should be made if the thread breaks while being used? What change should be made if the stitches are too loose on the top or the bottom side of the fabric?

Divide the class into small groups. Instruct the groups to practice identifying sewing machine parts and their purposes. CRITICAL QUESTION: How will sewing machine design change in the future?

Demonstrate safe and appropriate use of measuring, sewing, and pressing equipment. Lead a class discussion about safety practices to follow when using a sewing machine, an iron, and scissors. Have the students develop safety rules to be followed in class. Ask volunteers to post the rules in appropriate places.

3. Construction of personal and household textile products

Lead a class discussion on flat pattern and draping techniques used to design and construct garments. Demonstrate the draping process for the students. KEY QUESTIONS: What are the advantages of using the draping method? What are the advantages of using the flat pattern method? How can a design benefit from combining the two methods?

Present an illustrated lecture comparing garment construction using flat pattern design to garment construction using draping techniques. Encourage students to attempt to create simple designs using both methods. KEY QUESTIONS: In what ways are flat pattern design and draping techniques different? similar? Which construction method is the easiest to use? Why? Which construction method is best to use when constructing a simple garment design? Why?

Lead a class discussion about garment construction processes. Define and demonstrate the following construction techniques: *cutting*, *marking*, *pattern layout*, *stay stitching*, *basting*, *permanent hand stitches*, *darts*, *reinforcement*, *seams*, *seam finishes*, *zippers*, *underlining*, *lining*, *weights*, *inside waist stay*, *covered snaps*, *hooks*, *eyes*, *hem finishes*, *attaching fasteners*, *buttonholes (worked and bound)*, *hems*, and *alterations*. Have the examples available for students to refer to. NOTE: To reinforce construction techniques, give students copies of Teaching Aids 29-51 found in *Apparel*, available from the Home Economics Curriculum Center, Texas Tech University, Lubbock, Texas.

Have students examine various garments to see the couture finishing techniques that have been used. KEY QUESTIONS: What effects do couture finishing techniques have on a garment? Do couture finishing techniques improve the inside appearance of a garment? Is the overall appearance of a garment more pleasing when couture techniques are used? Why? CRITICAL QUESTIONS: Are the effects of couture finishing techniques worth the extra time it takes to complete a garment? Why?

Have the students select basic flat patterns such as skirts, T-shirts, shorts, or simple shirts. Instruct the students to construct the selected garments using the construction and alteration techniques discussed in class. Monitor each step in the students' construction processes.

Present a draping demonstration and have students use draping design and construction techniques to cover footstools, picture frames, or other household objects. After the students complete their projects, instruct them to evaluate the results. Display the finished products in a classroom or school display case. KEY QUESTIONS: Which draping techniques were the easiest to master? the most difficult? How did the selection of fabric contribute to the success of the project?[B]

Have the students use the draping technique to design a simple garment such as a tank top, camp shirt, jumper, or half-shirt. Tell the students they may combine flat pattern and draping techniques to construct the garment. Ask volunteers to organize a classroom fashion show featuring student models and their projects.[C]

Lead a class discussion on the following statement: "Creativity is merely to take something you have or have found and reassemble it in a different way." Allow the students to look through fashion magazines to discover the variety of creative techniques that can be used in garment construction. Have the students select several apparel illustrations and write paragraphs describing how they would reassemble the parts of the garment to create new designs. KEY QUESTIONS: What is creativity? What is the relationship between fashion and creativity?[B]

Have the students use their creativity to construct items such as appliqued, patchworked, or quilted vests, handbags, or tote bags. Encourage the students to incorporate pillow slips, sheets, dishcloths, blankets, towels, and bedspreads into their designs. Promote the use of offbeat color combinations, buttons, bows, braids, and unusual fabric combinations. Display the projects in a classroom or school display case.

Instruct the students to use their knowledge of the elements and principles of design to design and construct garments for themselves, family members, or friends. Students should consider the individuals' face shapes, body shapes and sizes, personalities, and wardrobe needs when designing the garments. Students may develop patterns using the draping and flat pattern techniques or they may combine and alter commercial patterns. Instruct students to select appropriate fabrics, notions, and trims for the garments. Students should fit the garments to the wearers and make adjustments as needed. Display the completed garments in the classroom. KEY QUESTIONS: What is the most difficult aspect of designing and constructing garments for other people? the most fulfilling aspect? CRITICAL QUESTION: Why are periodic fittings important when designing and constructing a garment?

TAC 75.83
TEXTILES AND APPAREL DESIGN
UNIT VI

COMPETENCY: (p.6) *Concepts and skills related to costing and producing the final design product.*

SUB-COMPETENCIES:

(A) *Identify process for product completion.*

(B) *Relate product design to construction requirements.*

(C) *Describe product marketing procedures.*

(D) *Describe effect of technology on the textile and apparel industries.*

CONCEPTS

VI. Costing and producing the final design product
  A. Product completion process

LEARNING AND EVALUATION EXPERIENCES

Display Teaching Aid 45, Costing Apparel. Lead a class discussion during which the students compare the manufacturer's cost to the retailer's cost. KEY QUESTIONS: Who has the highest cost? Why? Who earns the highest profit? Why? CRITICAL QUESTION: How will increased automation alter the manufacturer's cost schedule?

Divide the class into several small groups. Provide each group with pictures of expensive and elaborately designed apparel items. Instruct each group to look at its pictures and determine why the garments are high priced. Lead a class discussion on design and construction cost factors.[B]

Have the students select natural fibers, such as wool or cotton, and trace the fibers' refining processes from the raw material harvest to the retail fabric sale. Have volunteers share their information with the class. KEY QUESTIONS: Which refining process is most economical? Why?[B]

Instruct students to read selected references and define the following terms: *assembly line*, *bundler*, *buyer*, *certification label*, *division of labor*, *fashion bomb*, *fashion classic*, *fashion promotion*, *grader*, *hang tag*, *industrial engineer*, *jobber*, *label development*, *markers*, *heading*, *low-labeling*, *marker maker*, *marketing*, *position the line*, *production*, *ready-to-wear*, *retail sales*, *sorter*, *tariff*, *time line*, *union*, and *wholesale sales*. Provide sufficient time for the students to share their findings with the class.[B]

[B] = Basic Skill Reinforcement

[C] = Common Essential Element

Invite a manufacturer, designer, or textile production manager to speak to the class about the process used to produce a textile product. Help the students develop appropriate questions to ask the speaker.

Present an audiovisual that shows how a garment is produced in an apparel factory. Preview the audiovisual and make a list of questions for students to answer after viewing the audiovisual. Lead a class discussion regarding the students' answers to the questions.[B]

Divide the class into three groups. Instruct each group to read selected references and gather information about one of the three aspects of production costs (material costs, labor costs, and overhead). Remind each group to use current information. Instruct the groups to compare domestic production costs with import production costs. Allow each group to present their information to the class in an oral report. KEY QUESTIONS: Which costs are the highest? Why? How do domestic production costs and import production costs differ?[B] [C]

Instruct the students to research the apparel production process. Have the class identify the steps and jobs connected with apparel production. Lead a class discussion on Teaching Aid 46, Apparel: From Origin to Consumer. Ask the groups to share their findings with the class. Have students compare their research findings with information on the teaching aid.[B] [C]

B. Relationship between product design and construction requirements

Have students read selected references and gather information about product construction requirements. Instruct students to summarize their information in short papers. Compile the papers into a classroom reference booklet.[B]

Divide the class into several small groups and give each group a copy of a basic pattern envelope and a couture pattern envelope. Instruct each group to compare the pattern envelopes and make a list of the major differences in the directions, the number of pattern pieces, suggested fabrics and notions, etc. Lead a class discussion on the relationship between apparel design and construction requirements. KEY QUESTION: Which type of pattern requires the most pattern pieces? CRITICAL QUESTION: What does the number of pattern pieces indicate about a pattern?[B]

Invite a production manager from a local clothing company to class to explain how a design is constructed in an apparel manufacturing factory. Have the students prepare questions to ask the speaker about daily factory activities, industrial activities during peak seasons, and the effects of factory activities on product costs.

Present a slide show containing textile products that are examples of good design and poor construction. Examples include the following:

1) Plaid skirt constructed with uneven plaid fabric
2) Bathing suit constructed with transparent fabric
3) Dress constructed with off-grain fabric pieces

Lead a class discussion regarding the inappropriate construction techniques used on the pictured garments. KEY QUESTION: What criteria should an individual use to determine if a fabric is an appropriate choice for constructing a particular garment?

Lead students to brainstorm and list types of textile designs. Ask a volunteer to record the list on the chalkboard. Lead a class discussion on the special fabrics, finishes, and processes required to construct the textile designs. Discuss how the relationships between textile designs and required construction techniques affect finished products. KEY QUESTIONS: Which fabrics require specific seam finishes? How is garment quality affected when sewing shortcuts are taken?[C]

Instruct the students to look through magazines and find pictures of clothing that appears to be constructed from flawed or poor designs. Have each student select three pictures to mount on construction paper. Each student should write a paragraph that explains why the pictures are examples of flawed or poor designs. KEY QUESTIONS: What is a flawed design? What is a poor design? CRITICAL QUESTION: How does flawed or poor design affect garment construction?[B]

Divide the class into three groups. Tell each group to identify, draw, and describe an apparel or home furnishings textile product that is not produced because of cost, lack of technology, or lack of consumer demand. Instruct each group to recommend how its product could be altered for production.[B] [C]

C. Product marketing procedures

Have students research various references to gather definitions of *marketing*. Lead a class discussion allowing students to compile a class definition. Marketing may be defined as the various activities involved in stimulating and maintaining the profitable flow of goods from the raw product to manufacturers to the retailer for purchase by consumers. KEY QUESTIONS: Based on the class definition, what activities are involved in the marketing process? What roles do the following components of the fashion industry have in the marketing process: fiber producer, spinner and throwster, weaver and knitter, converter, finisher, garment manufacturer, retail store, and consumer.

Lead students to brainstorm and list promotion techniques used to market products. Divide the class into groups and tell the groups to develop marketing plans for specific products. Have the groups share their results with the class. KEY QUESTION: What are the most common marketing techniques used to promote products? CRITICAL QUESTION: Why are effective marketing plans vital to manufacturers?[B] [C]

Show students apparel advertisements. Lead a class discussion regarding the messages the apparel advertisements convey. KEY QUESTIONS: What appeals do the advertisements make to teenagers? children? women? men? What components of the advertisements appeal to teenagers? children? women? men?

Ask volunteers to create a bulletin board entitled, "I Want You." Instruct the volunteers to use several advertisements that attempt to manipulate a consumer's purchasing decisions. Lead a class discussion regarding the effect the advertisements have on consumers. KEY QUESTIONS: Which advertised items would consumers purchase because of the advertisement? Why? Which advertisements would not motivate consumers to consider purchasing the item? Why?[C]

Divide the class into groups. Instruct the groups to look at catalogs, newspapers, or magazines and choose advertised items that do not appeal to them. Have the groups create new advertisements for the items. Students may create newspaper, magazine, radio, or television advertisements. Instruct the groups to present their advertisements to the class. KEY QUESTION: Which advertising medium conveys the message to the most people? CRITICAL QUESTION: How should an advertiser determine which medium to use?[C]

Invite several local store owners to participate in a panel discussion about apparel and household textile product advertising. Have the students prepare questions to ask the panel members. Instruct the students to record the panel members' answers to their questions.[B]

Lead students to brainstorm and list ways the apparel industry attempts to manipulate consumer choices. Have the students read excerpts from books regarding the reasons people make specific purchases. Instruct students to share their information in class. KEY QUESTIONS: How does the apparel industry influence individual and family financial planning? How do consumers react to the demands of the apparel industry?[B]

Have students read consumer magazines and obtain information on the influence consumers have on the apparel industry. Instruct the students to write summaries of their findings. Compile the summaries into a classroom reference booklet.[B]

Have the students select specific textile products and create multimedia displays in school showcases. Instruct the students to write paragraphs that evaluate the effectiveness of the displays. Lead a class discussion regarding effective display techniques.[B] [C]

Make arrangements for students to assist in the preparation of window displays and in-store displays at local retail businesses. Instruct the students to write paragraphs describing how they assisted the display people and what they learned from the experience. KEY QUESTION: Which display props are the most versatile? CRITICAL QUESTIONS: Why are displays used to promote marketing themes? How do displays reinforce marketing promotions?[B]

Arrange for the class to visit a store that is having a trunk show. Lead a class discussion comparing the trunk show method of selling to regular stock selling of merchandise. CRITICAL QUESTIONS: Who profits most from a trunk show—the retailer, manufacturer, or customer? Why?

Divide the class into groups. Have the groups compare catalog products, prices, and information to in-store products, prices, and information. KEY QUESTIONS: Which method of selling offers the most information? Which information is the easiest to obtain? Is there a price difference between catalog and in-store merchandise? Why?[B]

Ask the students to collect catalogs that advertise fabric and apparel items. Have the students cut out pictures from the catalogs. Instruct volunteers to place pictures from the catalogs on a bulletin board. Lead a class discussion during which the students determine the characteristics of the items.

D. Effects of technology on the textile and apparel industries

Arrange for the class to visit an apparel designer who uses computers to create patterns. Ask the designer to demonstrate the process and allow some of the students to try to create patterns. Instruct students to write paragraphs summarizing what they learned from the designer.[B]

Introduce robotic theory and SPC (Statistical Process Control) to the students. Explain that by using SPC, a textile manufacturing computer can monitor each production step so that factory workers can correct mistakes or reject goods at any point in the manufacturing process. Lead a class discussion regarding how the adoption of SPC will influence the textile industry. KEY QUESTION: How will SPC affect final product inspection? CRITICAL QUESTION: Why will increased factory use of SPC result in lower priced consumer goods?

Suggest ways that the following examples of technological equipment has changed textile and apparel manufacturing:

1) Air-jet weaving machines
2) Circular top-feed blenders
3) Automatic knitting machines
4) Shuttleless looms
5) Loop-dye units for mercerizing and dyeing
6) Yarn testers
7) Rapier weaving machines
8) Pile circular knitting machines
9) Garment dyers

Show audiovisuals that explain and illustrate the ways computers have affected textile design and production. Lead a class discussion on the major points of the audiovisual presentation. KEY QUESTIONS: What is CAD (computer-aided design)? What is CAM (computer-aided manufacturing)? CRITICAL QUESTION: How will CAD and CAM affect textile design and production in the future?

Invite a representative from a commercial knitting machine company to explain computerized knitting machinery to the class. Help the students prepare appropriate questions to ask the speaker. Instruct the class to record the speaker's answers to the questions.[B]

Instruct the students to use references to identify computerized pieces of home and industrial sewing equipment. Have students share their findings with the class. Have a volunteer make a list of computerized sewing equipment. Display the list in the classroom so that additions may be made as they are identified throughout the semester. CRITICAL QUESTION: How will increased use of computerized equipment affect apparel production?

Obtain information from sources such as NASA regarding how technology has been influential in the development of textiles and apparel for space travel. Instruct each student to read the information and write a summary paragraph. KEY QUESTION: How have textiles and apparel originally designed for space travel been adapted by the commercial apparel industry?[B]

Lead students to brainstorm and list advantages and disadvantages of cotton. Ask a volunteer to record the list on the chalkboard. Lead a class discussion on manufactured cotton and the effects the new fiber will have on the textile industry. KEY QUESTIONS: Is the fiber more suitable for apparel or household textile use? Why? CRITICAL QUESTIONS: How will consumers respond to the new fiber? Why do consumers have emotional attachments to cotton?[C]

Instruct the students to use resources to gather information about the newest equipment used in textile manufacturing. Lead a class discussion regarding how the new changes will affect fashion, apparel availability, and factory workers. Ask the students to predict and describe future changes new textile equipment will cause.[B]

Have students research textile trade journal articles and other references for information on new fibers, finishes, and dye processes developed as a result of updated technology. For each new fiber, finish, or dye process identified, have students describe characteristics, uses, and applications. Fiber examples include Alpha (polypropylene), Hydrofil (a copolymer), and Tencel (a cellulosic fiber). A fabric finish example is polytetrafluoroethylene (Teflon). A new dye process involves adding pigment to manufactured fibers during extrusion. KEY QUESTIONS: What characteristics does each new fiber possess? How are the new fibers being used in the textiles and apparel industry? What future possibilities exist for each fabric? How can new finishes and updated dyeing processes affect textile manufacturing?

Make a presentation to the class regarding Quick Response networking. Use an audiovisual about Quick Response as part of the presentation. Lead a class discussion regarding the effects of the Quick Response system on manufacturers, wholesalers, retailers, and consumers. KEY QUESTIONS: What is involved in Quick Response networking? (The system involves various components of manufacturing, supplying, retailing, inventory, and ordering to be networked by computer so that orders are filled quickly, less warehousing of stock is required, constant inventories are kept, and communication is simplified.) What problems in the apparel industry led to development of Quick Response? (Examples include requests for more diverse styles, need to produce faster with a shorter delivery time, and fewer buyers placing large orders long before a season starts.) CRITICAL QUESTIONS: How might use of Quick Response give manufacturers in the United States an advantage over import suppliers? How might the consumer ultimately profit from the industry's use of Quick Response?

TAC 75.83
TEXTILES AND APPAREL DESIGN
CAREER OPTIONS AND ADJUSTMENTS

COMPETENCY:

(a.7) *Concepts and skills related to career options and adjustments.*

SUB-COMPETENCIES:

(A) *Relate personal characteristics to the appropriate career(s) addressed within each home economics course.*

(a.2 A) *Identify employment opportunities and preparation requirements in the chosen field.*

(B) *Describe management practices facilitating individuals assuming multiple roles.*

(C) *Discuss demands and rewards in relation to personal and family life.*

(D) *Demonstrate effective money management.*

CONCEPTS

Career options and adjustments
- A. Personal characteristics needed for textile and apparel design careers
  - a.2 A Employment opportunities and preparation requirements

LEARNING AND EVALUATION EXPERIENCES

NOTE: In situations where both the Apparel course and the Textiles and Apparel Design course are offered on a campus and taken by the same students, it is recommended that the Career Options and Adjustments unit in the Apparel course focus on careers related to apparel selection, construction, and management. The Textiles and Apparel Design course should focus on careers related to design, production, and marketing.

Invite a personnel officer or a management level professional in the textile or apparel design industry to speak to the class about the characteristics and qualities of successful employees. KEY QUESTIONS: What qualities and characteristics do employers desire in employees? Why? How do personality qualities and characteristics relate to success on the job? CRITICAL QUESTION: What criteria should an employer use to determine whether or not an individual will be a valuable employee?

Divide the class into groups and have each group elect a leader. Instruct each group to identify jobs in the fashion industry and develop a chart showing the organization of a textile or apparel manufacturing industry. Have each group leader explain the group's chart to the class.[C]

[B] = Basic Skill Reinforcement
[C] = Common Essential Element

Divide the class into groups. Have each group research and report on an aspect of the apparel manufacturing industry. The reports should include information about specific jobs, duties, wages, working conditions, and career opportunities. Instruct the groups to consider positions such as designer, sample maker, pattern maker (graders, markers), production worker (cutting manager, factory manager), sales representative (road, showroom), advertising representative, office manager, and bookkeeper. KEY QUESTIONS: Which professions offer new professionals the most opportunity? Why?[B]

Invite a representative from an apparel manufacturing company to speak to students about careers in the industry. Have the students prepare questions to ask the speaker. Following the presentation, have the students write brief reports summarizing the information the speaker presented.[B]

Make arrangements for the class to tour a textile or apparel manufacturing company. Lead a class discussion comparing assembly line employees' work environment, pay, and prestige with design and management employees' work environment, pay, and prestige. KEY QUESTIONS: What types of skills are required for an assembly line employee? a management employee? How are the skills of design workers and assembly line workers similar? How are they different?

Ask the students to research famous fashion designers and determine what characteristics contributed to their successes and what impact their successes had on their lives. Instruct the students to use the research to prepare written reports. KEY QUESTIONS: What personality characteristics did the designers possess that contributed to their successes? How did the designers' personality characteristics contribute to their successes? How did the designers' work affect the fashion world? How did the designers' work affect their lives?[B]

Have the students write to textile and apparel industry organizations and request information about careers in the textile and apparel industries. See Teaching Aid 47, Textile and Apparel Industry Organizations, for examples. Instruct the students to use the information they obtain to prepare written reports about selected career fields.[B] [C]

Have students develop career ladders using the job titles listed on Teaching Aid 48, Apparel and Textile Career Ladders. Allow the students to work together in small groups to develop the ladders. Ask a representative from each group to explain the group's ladder to the class. KEY QUESTIONS: Which positions are entry level? Which positions require previous experience? CRITICAL

QUESTION: Why is knowledge of career ladders important to new professionals?[C]

Have students read college catalogs and list types of courses textile and apparel degree programs require. Instruct students to create degree plans for selected textile or apparel design majors.[B]

Have the students use selected government documents to research characteristics of jobs in the textile and apparel industries. Have the students investigate salary, training, education requirements, opportunities for career advancement, job locations, and the advantages and disadvantages of the jobs. Instruct students to report their findings to the class.[B]

B. Management of multiple roles

Lead students to brainstorm and create a list of management skills. Have the students study the list and identify management skills they do not currently possess. Next, have the students identify jobs in the textile and apparel industries that they might hold ten years from now. Instruct the students to identify management skills they will need in their future jobs. Lead a class discussion on the importance of developing and practicing good management skills now. CRITICAL QUESTIONS: How can future professionals improve their management skills before they are employed? How does the development of management skills help one manage multiple roles?[C]

Assign students to interview different types of employed parents such as dual-career parents, single parents, parents with one child, parents with two or more children, and older or younger parents to identify ways they manage time and other resources. Guide students in developing an appropriate interview form in class. Have students summarize interview findings.

Invite professionals in the community to be members of a classroom discussion panel. Ask the guests to explain how they balance their family and work commitments. Help the students develop questions to ask the panel members.

Lead a class discussion regarding management skills needed when assuming multiple roles. Have the students identify hypothetical situations for various occupations and then ask them to describe which management skills will be needed to master multiple roles. NOTE: Some textile and apparel occupations require nontraditional work hours. Remind the students that some occupations are more stressful than others. CRITICAL QUESTION: How does risk taking influence management decisions?[C]

Instruct the students to interview grandparents or elderly persons about what it was like to be a homemaker or wage earner twenty, thirty, or more years ago. Have the students share their information with the class. KEY QUESTIONS: Do people often assume one role or multiple roles in the family? Why? What resources help people perform their jobs in the home and at work? CRITICAL QUESTION: How have the roles in today's families changed?

Invite a local professional to speak to the students regarding how to enjoy a happy and healthy family life while pursuing a demanding career. Help the students prepare questions to ask the speaker.[C]

Have students read and complete activity D-1 on Stress Signals in *Home and Career*, pp. 47-49, from the Home Economics Curriculum Center, Texas Tech University, Lubbock, Texas. KEY QUESTIONS: How can stress reactions interfere with effective parenting? How can reductions of stress improve management of multiple roles?

Have the class read Teaching Aid 49, Time for Two. Divide the class into small groups and ask the groups to discuss the suggestions on the teaching aid. KEY QUESTION: Are the suggestions valid? CRITICAL QUESTION: Can couples strengthen their marriages by following the suggestions?

C. Demands and rewards of textile and apparel design careers

Lead students to brainstorm to develop a definition of *personal satisfaction*. Ask students to describe a situation that resulted in a feeling of personal satisfaction. Lead a class discussion regarding the importance of personal satisfaction in job selection. KEY QUESTIONS: To what do you attribute this feeling of satisfaction? What effects did this feeling of satisfaction have on your outlook on life?

Ask a volunteer to draw three columns on the chalkboard. Lead students to brainstorm and name ten different textile and apparel design careers. Instruct the volunteer to list the names of the careers in the first column (on the left side of the chalkboard). In the second column, have the students identify a work role that will be extremely demanding for an individual employed in each career. Have students suggest one reward, either intrinsic or extrinsic, that makes the career worth pursuing. Instruct the volunteer to record rewards in the third column. Lead a class discussion regarding the careers the students expressed interest in. KEY QUESTIONS: What are negative aspects of the careers? Which characteristics about each career can contribute to or deter from a happy and satisfying personal and family life? Why? CRITICAL QUESTION: Why can a characteristic considered positive by one person be considered negative by another person?[C]

Have students identify reasons why individuals enjoy textile or apparel design careers. Pose the following question: "What makes a person better prepared for promotions and advancement on the career ladder?" Lead a class discussion on the importance of remaining up-to-date with industry advancements. KEY QUESTIONS: Which occupations within the textile and apparel design industries are affected by technology? How are the occupations affected by technology? CRITICAL QUESTION: How can people prepare for future changes?[C]

Display Teaching Aid 50, Make Your Move. Divide the class into small groups and instruct each group to determine the considerations that affect a married person's career transfer or promotion. Join each discussion group for a few minutes and remind the students to consider intrinsic and extrinsic rewards. Also encourage each group to discuss the possible drawbacks connected to a career move.[C]

Have the students interview couples who relocated as a result of spousal transfers. Instruct the students to take notes during the interviews and share their information with the class. KEY QUESTIONS: What factors led to the couples' decisions to make the moves? Did the relocation have a beneficial or detrimental affect on the careers? Why? Under what conditions would the couples consider relocating in the future?[B] [C]

Have the students interview their parents or guardians about the problems and rewards they experience in their work and family lives. Instruct the students to write paragraphs that highlight the details of the interviews. Ask volunteers to share their paragraphs with the class.[B] [C]

D. Effective money management

Have the students determine average salaries for entry level, skilled level, and managerial positions in careers related to textiles and apparel design. After determining the average salaries, have the students work in small groups to develop profiles of families of different sizes. Instruct the students to select family types and develop budgets at each salary level. KEY QUESTION: What basic standard of living can the families expect? CRITICAL QUESTIONS: How adequate are the families' earned incomes? Are the incomes adequate for permanent living situations or for strictly transitional living situations? Why?[B] [C]

Lead a class discussion on budgeting and other methods of reducing costs related to employment. Ways to reduce costs include the following:

1) Use public transportation rather than owning a personal vehicle or paying for parking at work.
2) Work for a company that provides uniforms.

3) Work for a company that provides discounts.
4) Work at a location close to home.
5) Work for an employer that provides child care.

KEY QUESTION: How does the phrase "A penny saved is a penny earned" pertain to work-related budget techniques?[C]

Invite a representative from a financial institution to describe services of the institution and explain the loan application process for starting a small business. KEY QUESTION: How is the responsible use of a checking account related to application for a business loan?[C]

Invite a personnel manager to speak to the class about types, definitions, and characteristics of employee financial incentive programs. Ask the speaker to discuss bonuses, stock options, savings accounts, profit sharing, promotions, retirement plans, pension plans, and credit unions.[C]

Divide the class into groups to play a password-type game. Instruct the students to give one-word clues that describe specific financial incentives. Reward points based on the number of clues necessary to determine the incentive being described. KEY QUESTIONS: Which incentives can be provided by small companies? by large companies? CRITICAL QUESTIONS: How do incentives affect a family's income? budgets? How can incentives help provide for retirement years? children's educations? leisure activities? housing?[B] [C]

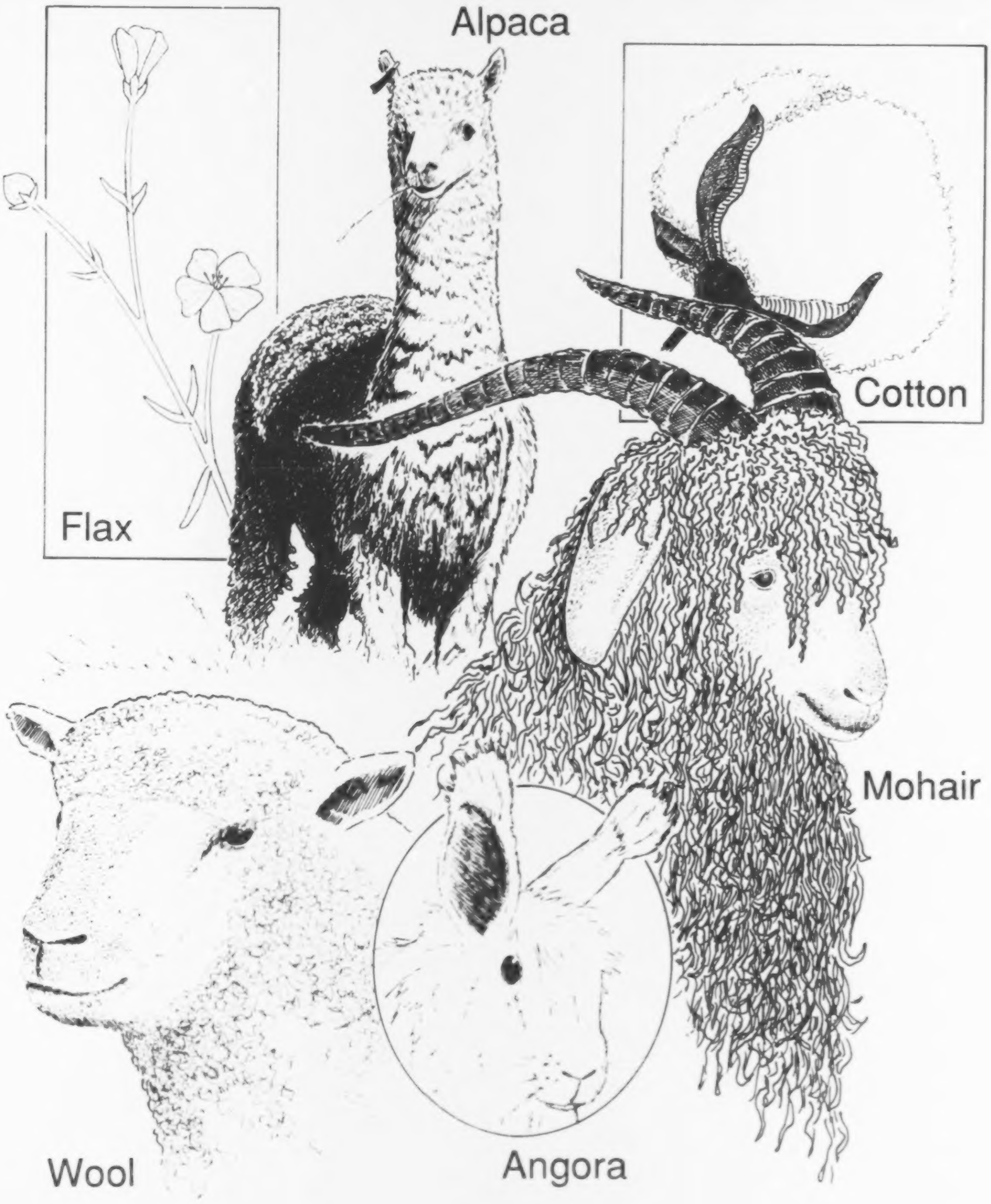
TEACHING AID SECTION

TA 1

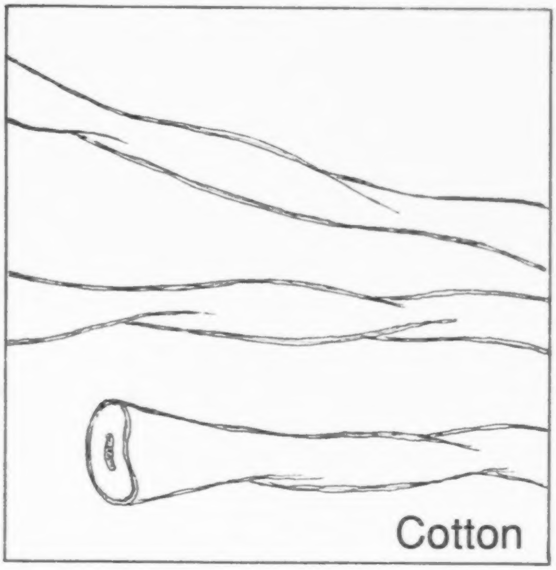
Physical Properties of Fibers

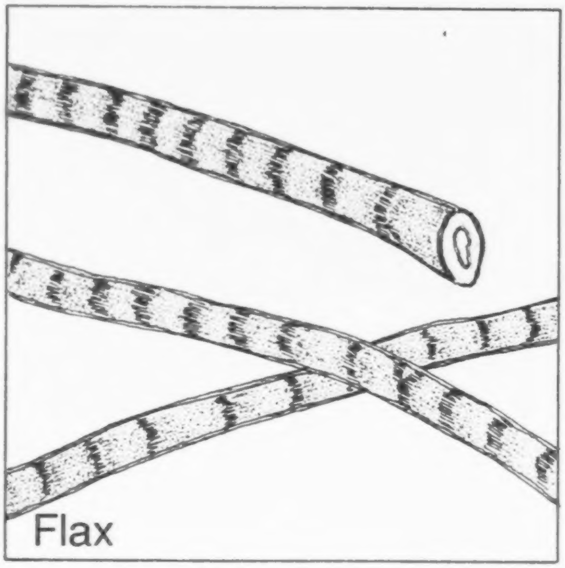
LENGTH	**Staple Fibers** - Short lengths of fiber measured in inches or fractions of an inch; includes all natural fibers, except silk **Filament Fibers** - Long continuous strands of fiber; measured in yards or meters
STRENGTH	The ability of a fiber to resist stress. Weak fibers can be used to make strong fabrics.
FLEXIBILITY	The ability of a fiber to bend repeatedly without breaking; allows for draping, comfort, pleating, and creasing
SPINNABILITY	The ability of a fiber to cling to other fibers to make yarn
SHAPE	The width and length of a fiber and the contour and shape of a fiber's cross section
DENSITY	The mass of a unit volume of material. Low density fibers cover a greater area than high density fibers.
LUSTER	The amount of light the surface of a fiber reflects; measured by degrees of brightness and dullness
ABSORBENCY	The ability of a fiber to take in moisture
ELASTICITY	The ability of a fiber to return to its original size, shape, or length when stress is removed

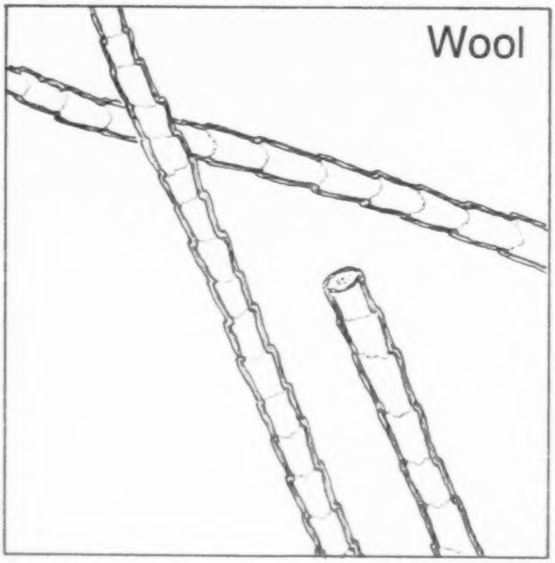
SOURCES OF
NATURAL FIBERS

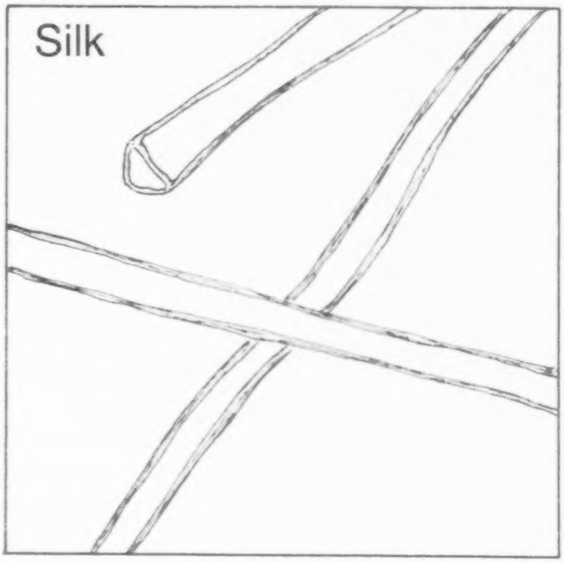

Alpaca
Flax
Cotton
Mohair
Wool
Angora

NATURAL FIBERS


Cotton


Flax


Wool


Silk

TA 4

Formulas of Manufactured Fibers

Generic Fiber Name	Major Ingredients
Acetate	
Acrylic	
Nylon	
Polyester	
Rayon	
Spandex	

Manufactured Fibers

GENERIC NAME	BRAND NAME	CHARACTERISTICS
Acetate	Celanese Chromspun Estron Loftura Estron	lustrous finish; shrink resistant; resistant to sunlight and perspiration; mildew resistant; withstands damage from moths; lacks strength; hangs well; dry clean
Acrylic	Acrilan Creslan Orlon Zefran	lightweight; warm; wrinkle resistant; sunlight resistant; shape bounces back; surface may pill; static electricity buildup
Nylon	Crepeset Monvelle Qiana Zefran	lustrous finish; strong; shrink resistant; moisture resistant; mildew resistant; easily laundered; static eletricity buildup; strong sunlight causes damage
Polyester	Dacron Fortrel Kodel Trevira	strong; shape bounces back; moisture and mildew resistant; easily laundered; holds creases and pleats that have been heat-set; not resistant to oily stains; sensitive to heat
Rayon	Avril Coloray Softglo Zantrel 700	cool to wear; lacks strength; sensitive to heat; absorbs moisture; subject to sunlight damage; mildews; wrinkles
Spandex	Glospan Lycra Monvelle	lightweight; strong; perspiration resistant; sensitive to heat; stretches

Fabric Absorption Tests

Conduct the following absorption tests on fabric samples and record the results on the chart below.

1) Place the rayon fabric sample in an embroidery hoop.
2) Hold an eye dropper half filled with water 3/8 inch above the sample.
3) Drop one drop of water on the fabric.
4) With a stopwatch, time the length of time required for the drop of water to be absorbed.
5) Repeat the experiment on the nylon fabric sample.

Fabric	Absorbency Time
Rayon	
Nylon	

Note: Good absorbency requires less than five seconds wetting time; poor absorbency requires more than five seconds wetting time.

Experiments with Fibers

Conduct the experiments as described. Use the charts on the following page to record changes that occur in fabrics.

Reaction to Heat

Hold an iron on each fabric swatch and describe the effect. Using tweezers, unravel fibers from each fabric swatch. Hold the fibers over an open flame. Describe how the fibers burn or melt, and describe the odor and/or residue left.

Bleach

Using an eyedropper, place a drop of bleach on each fabric swatch. Observe any changes and record the results.

Detergent

Select a powdered laundry detergent that does not contain any bleaches or brighteners. Dissolve a small amount of detergent in water and hand wash each fabric swatch. Allow the swatches to air dry. Record the results.

Moisture/Mildew

Thoroughly moisten and wrinkle each fabric swatch. Store each swatch in a plastic bag. Allow some air in the bag and place the bag in direct sunlight or in any hot, humid location for approximately two days. Record the results.

TA 7b

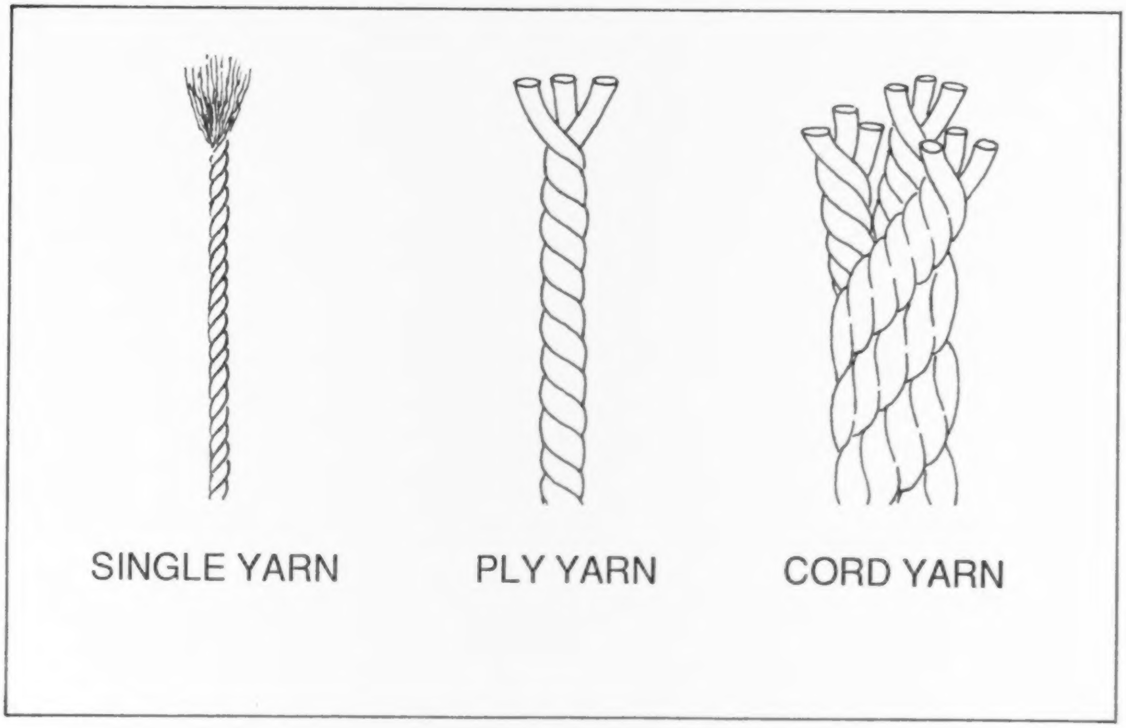
Natural Fibers

Fiber	Heat	Bleach	Detergent	Moisture/ Mildew	Descriptive Notes
Cotton					
Linen					
Ramie					
Silk					
Wool					

Manufactured Fibers

Fiber	Heat	Bleach	Detergent	Moisture/ Mildew	Descriptive Notes
Acetate					
Acrylic					
Nylon					
Polyester					
Rayon					
Spandex					

TYPES OF YARNS

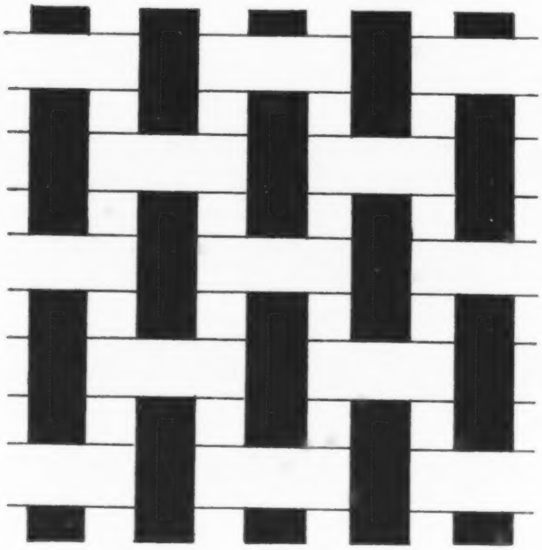


Single Yarn — made from either filament or staple fibers. When twisted, it will separate into fiber components.

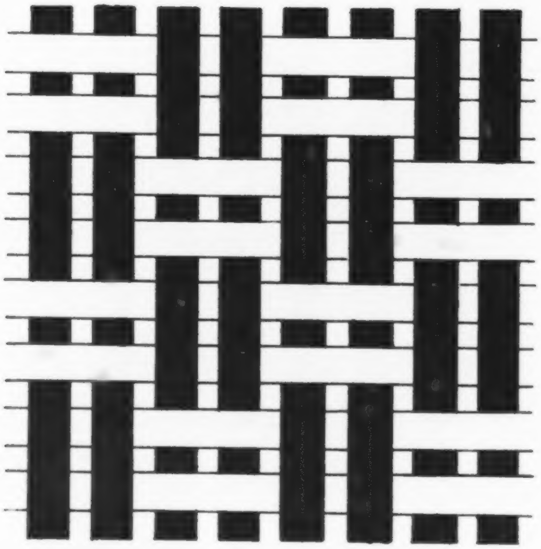
Ply Yarn — made from two or more single yarns that have been twisted together. When untwisted, it will separate into single yarns.

Cord Yarn — made from two or more ply yarns twisted together. When untwisted, it will separate into ply yarns.

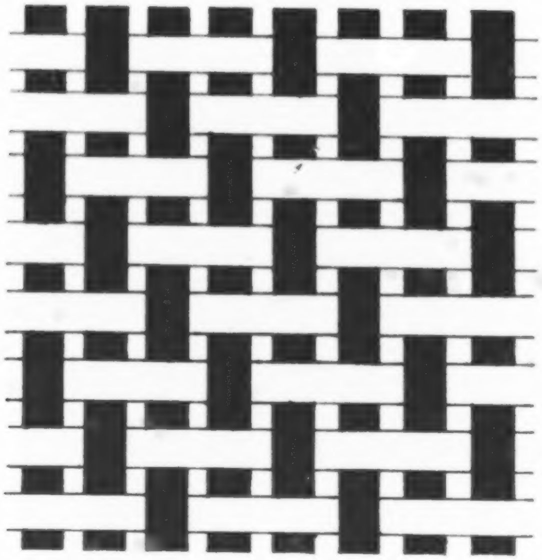
BASIC WEAVES



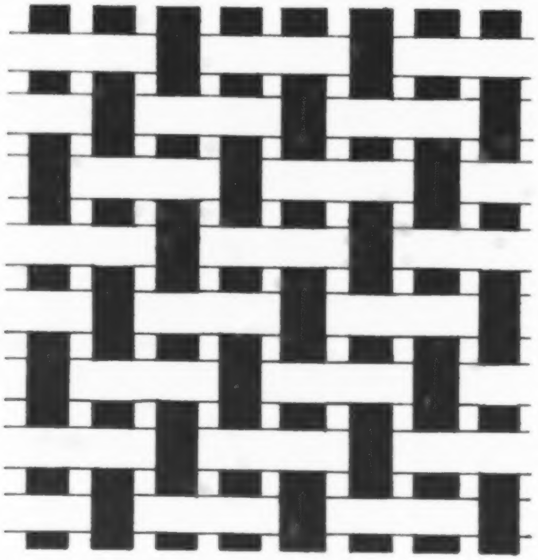
Plain weave



Basket-weave

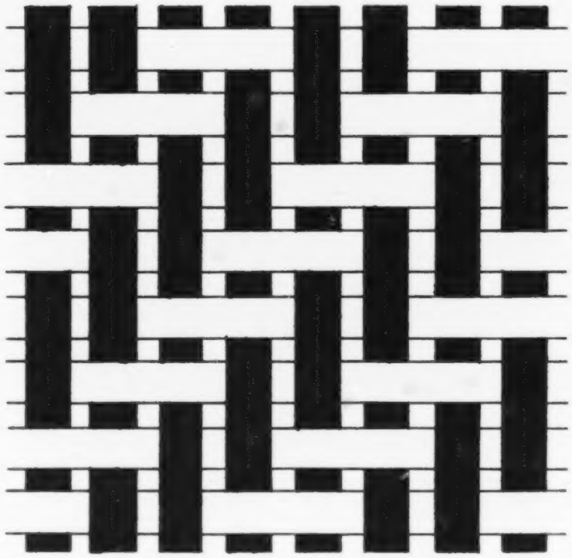


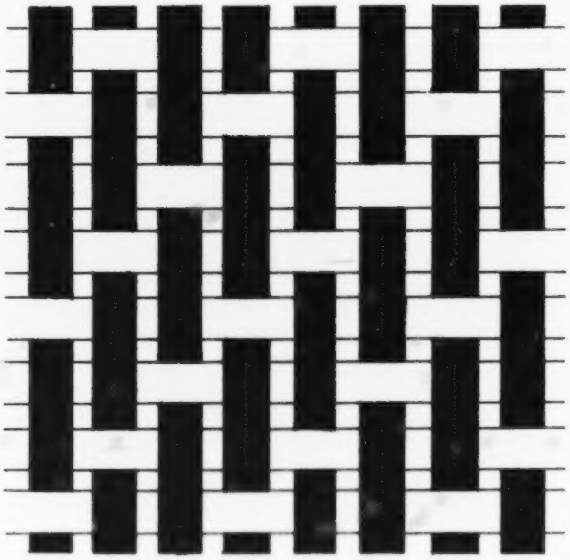
Left-handed twill weave

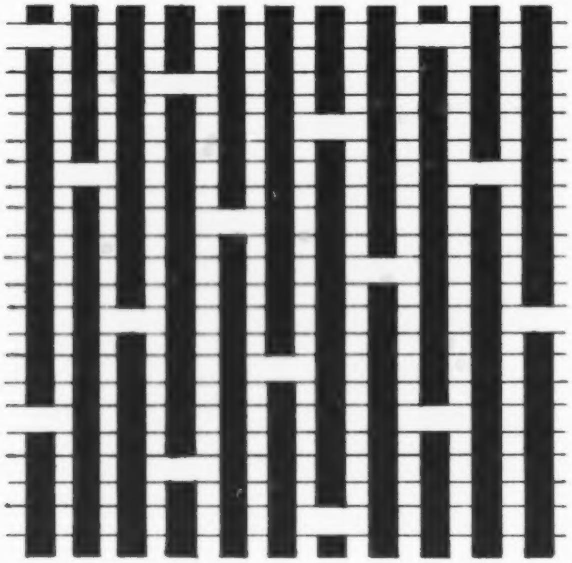


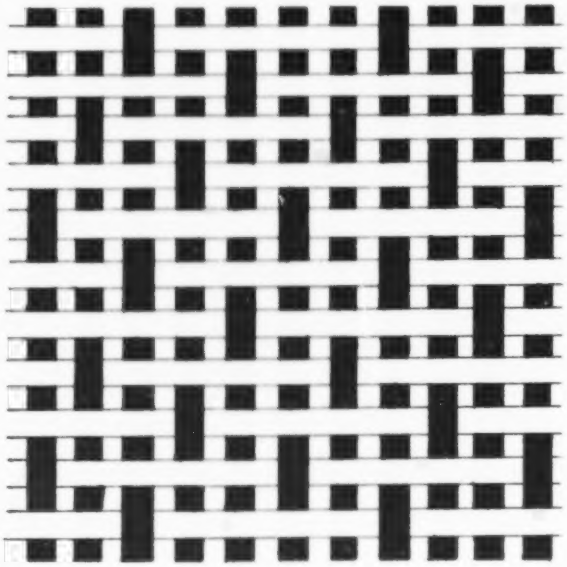
Right-handed twill weave

BASIC WEAVES

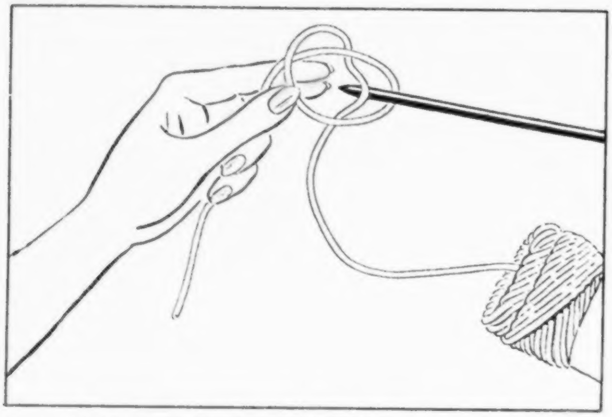

Right-handed, even-sided twill weave


Right-handed, warp-faced twill weave

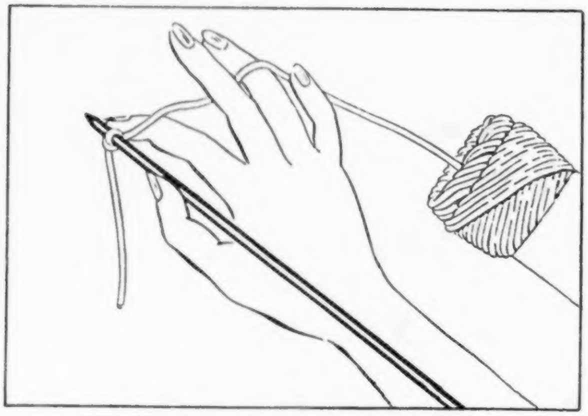

Satin weave


Sateen weave

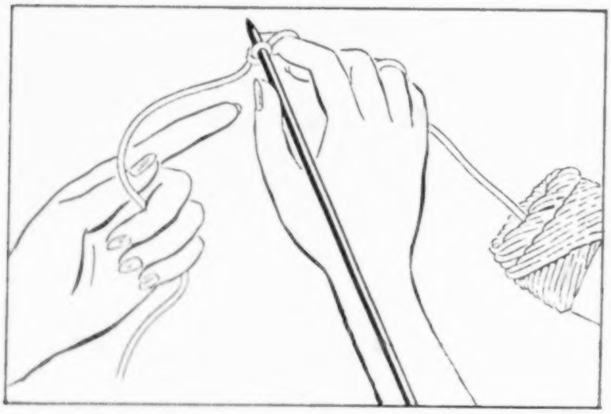
CASTING ON



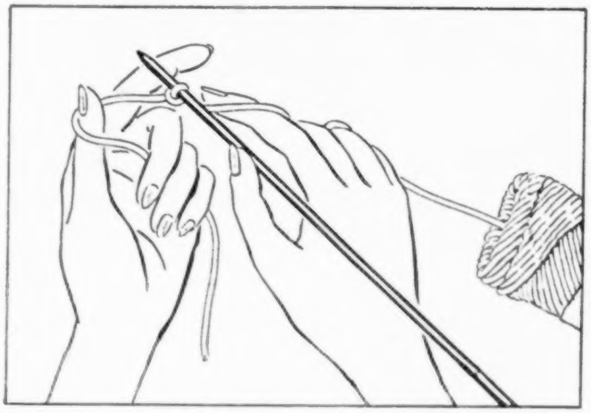
1. Make a slip knot 12" from end of yarn.



2. Hold needle in right hand; hold yarn as shown.

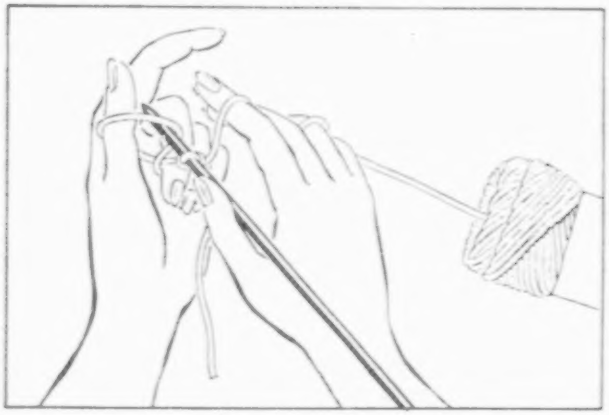


3. Notice position of left hand.

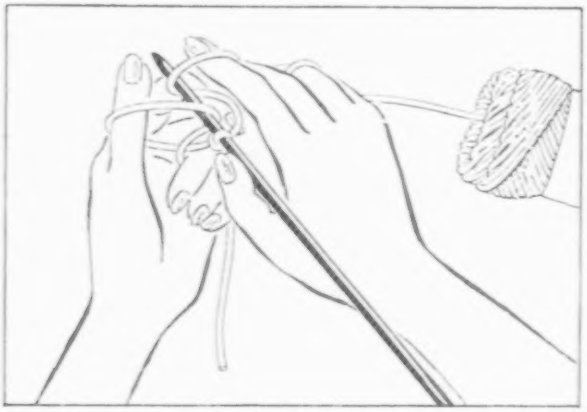


4. Loop left-hand yarn around thumb.

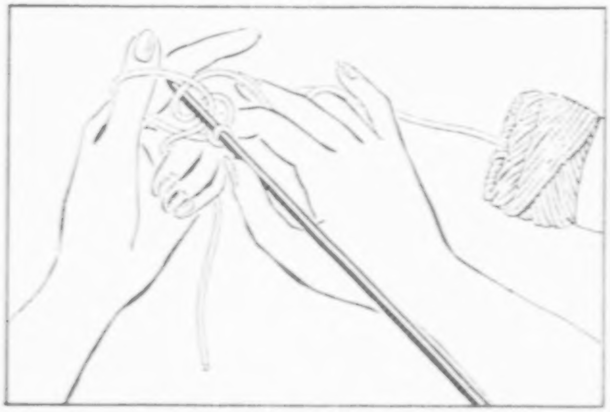
CASTING ON



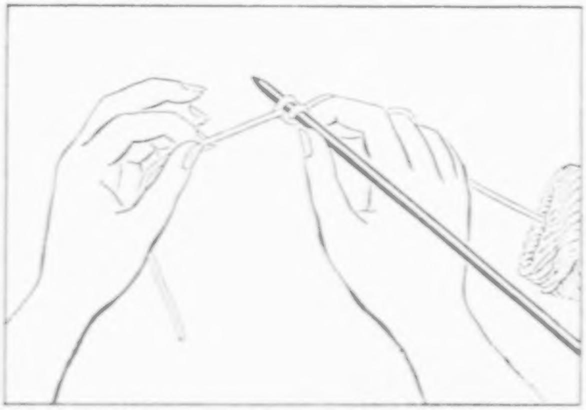
5. Insert needle into loop on thumb.



6. Loop right-hand yarn around point of needle.

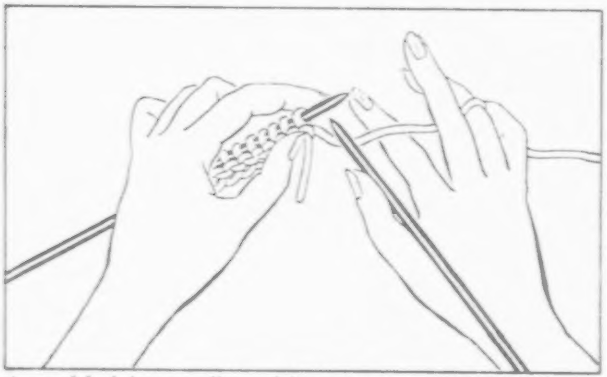


7. Draw yarn through loop on thumb.

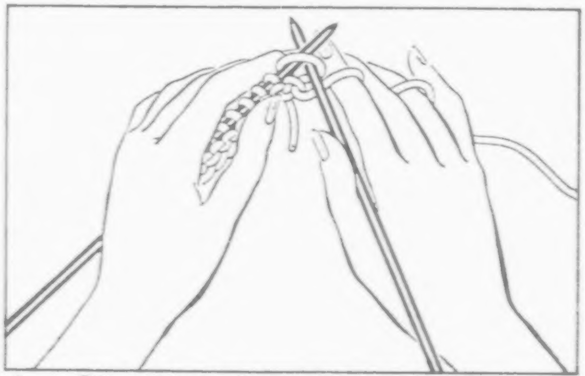


8. Pull yarn in left hand to tighten stitch, easing loop off thumb.

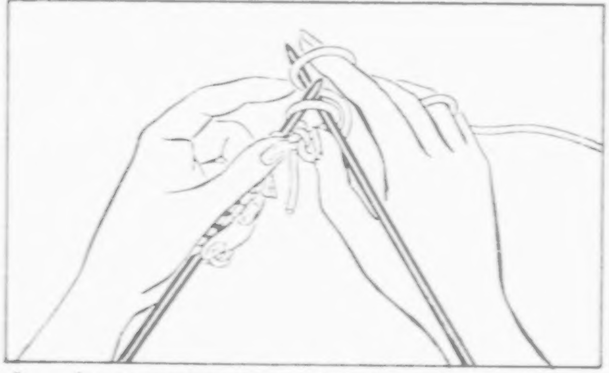
KNIT STITCH



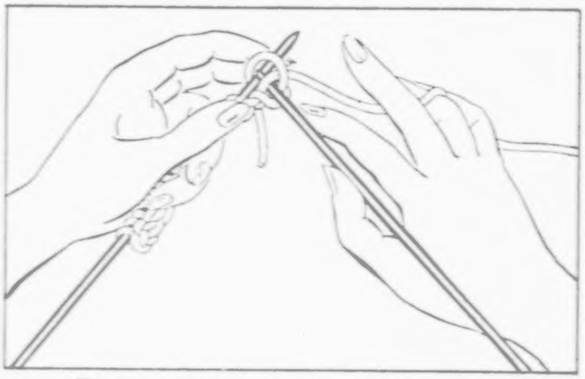
1. Hold needle with cast-on stitches in left hand, empty needle and yarn in right hand.



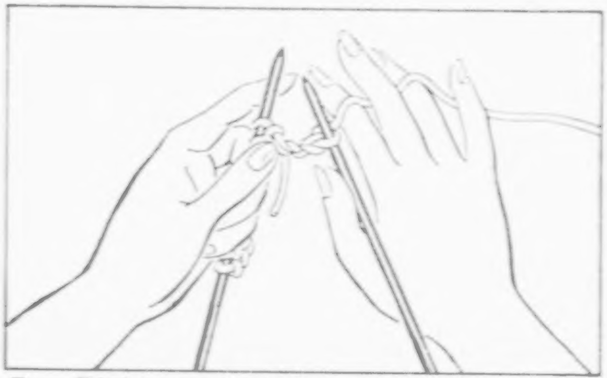
2. Slip point of needle into front of first stitch.



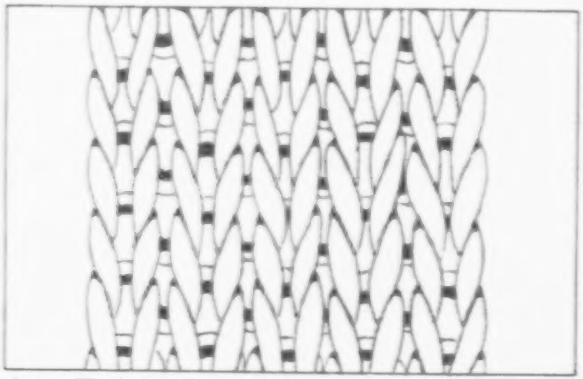
3. Loop yarn around point of needle with index finger.



4. Draw loop through stitch.

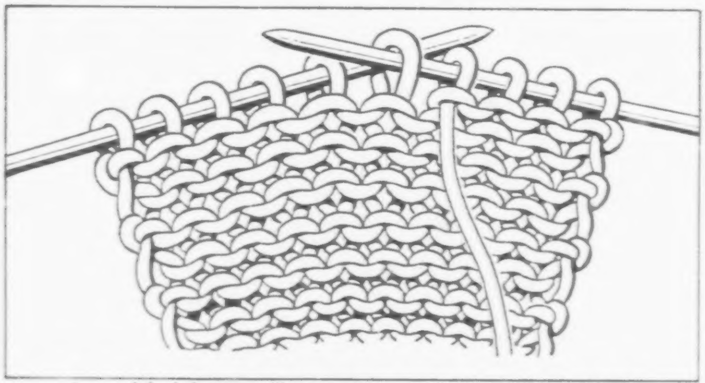


5. Right needle holds new stitch, old stitch is slipped off left needle — repeat same procedure for each knit stitch.

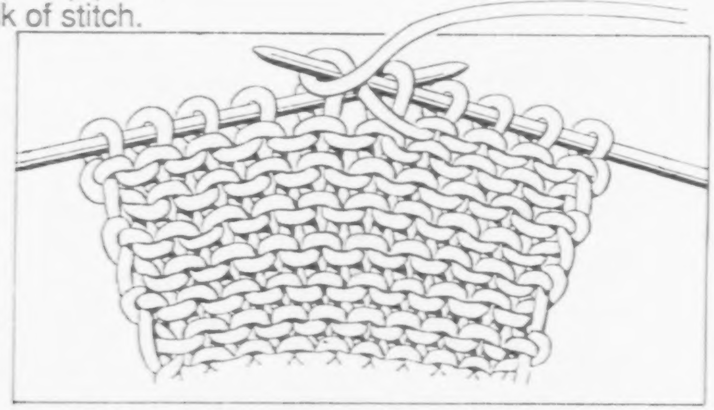


6. Finished knit stitches.

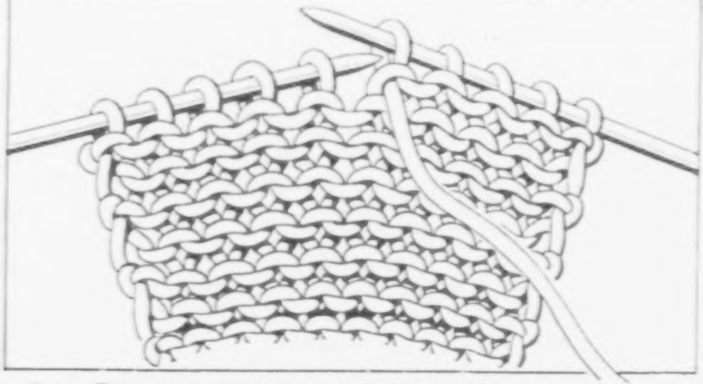
PURL STITCH



1. Hold needles same as for knit stitch but with yarn in front — slip point of needle in from back of stitch.



2. Loop yarn around point of needle.



3. Draw yarn through stitch; slip old stitch off left needle — repeat same procedure for each purl stitch.

TA 13

Investigating Fabrics

Fabric	Characteristics	Care Requirements	Uses

Investigating Labels

FABRIC/ GARMENT	FIBER CONTENT	FINISH	CARE LABEL INSTRUCTIONS

Investigating Hang Tags

Garment	Manufacturer/ Country	Fiber Content	Care Instructions	Other
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

TA 16a

Testing for Colorfastness

Laundering—Wash fabric and then iron under a white cloth. If the dye bleeds on the white cloth, the fabric is not colorfast.

Fabrics Tested	Results
1.	
2.	
3.	
4.	
5.	

Ironing—Iron fabric samples with a very hot iron. After samples have cooled, compare them with ones that have not been ironed. If the color does not change, the fabric is colorfast to ironing.

Fabrics Tested	Results
1.	
2.	
3.	
4.	
5.	

Steam—Place the samples between two white cloths and steam under a steam iron. If the fabric is colorfast, the dye will not bleed onto the cloth and the color will not change.

Fabrics Tested	Results
1.	
2.	
3.	
4.	
5.	

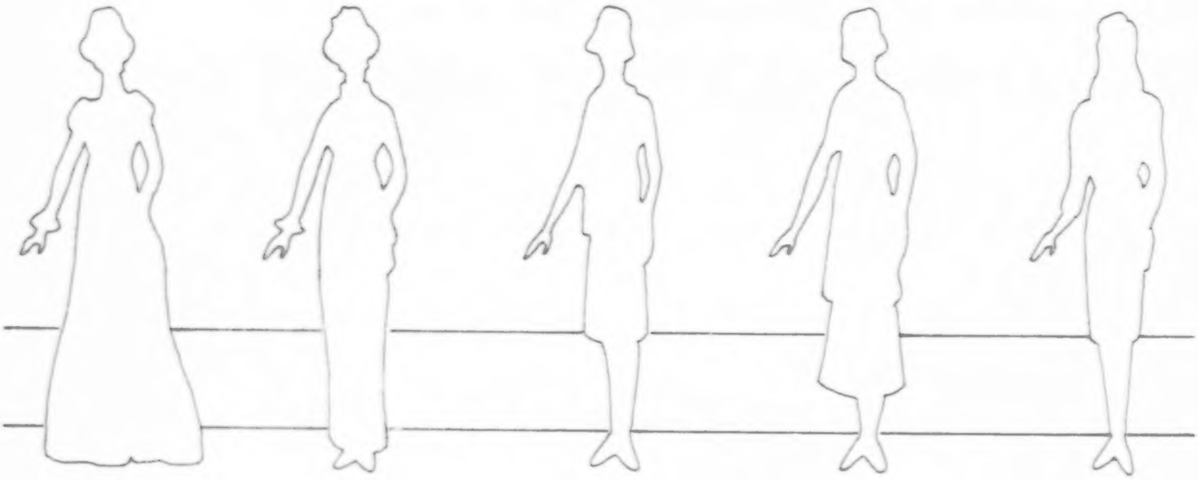
Perspiration—Soak dyed fabric samples in a weak acid or alkaline solution for ten minutes. Roll the fabric in a white cloth. Allow the samples to dry naturally in the white cloth. After two to three days, compare the tested samples to untreated samples. If the color of the fabric has changed or if the white cloth is stained, the fabric is not colorfast to perspiration.

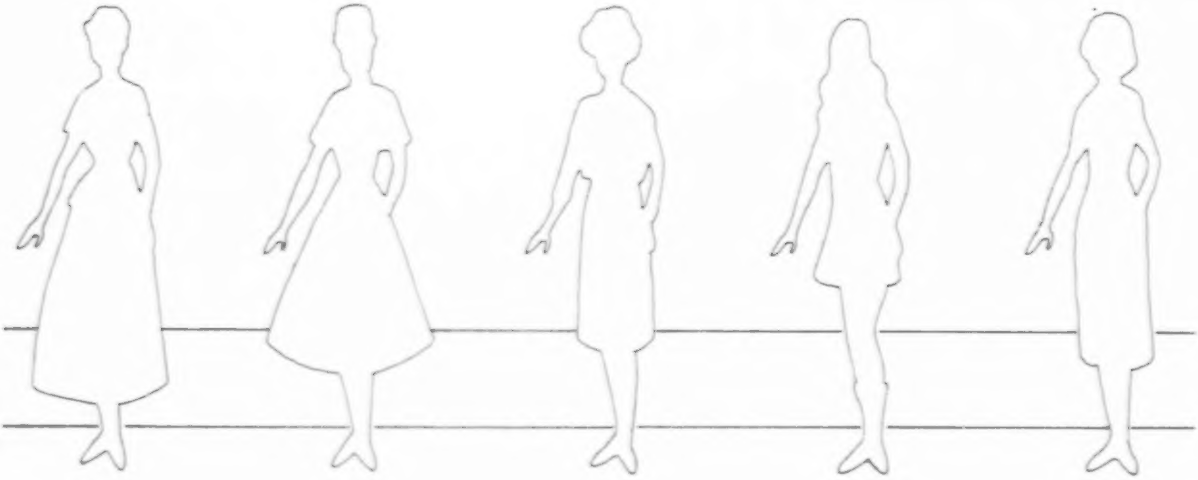
Fabrics Tested	Results
1.	
2.	
3.	
4.	
5.	

Crocking—Rub dry and wet samples against a white cloth. If the color does not rub off onto the white cloth, the fabric is colorfast to crocking.

Fabrics Tested	Results
1.	
2.	
3.	
4.	
5.	

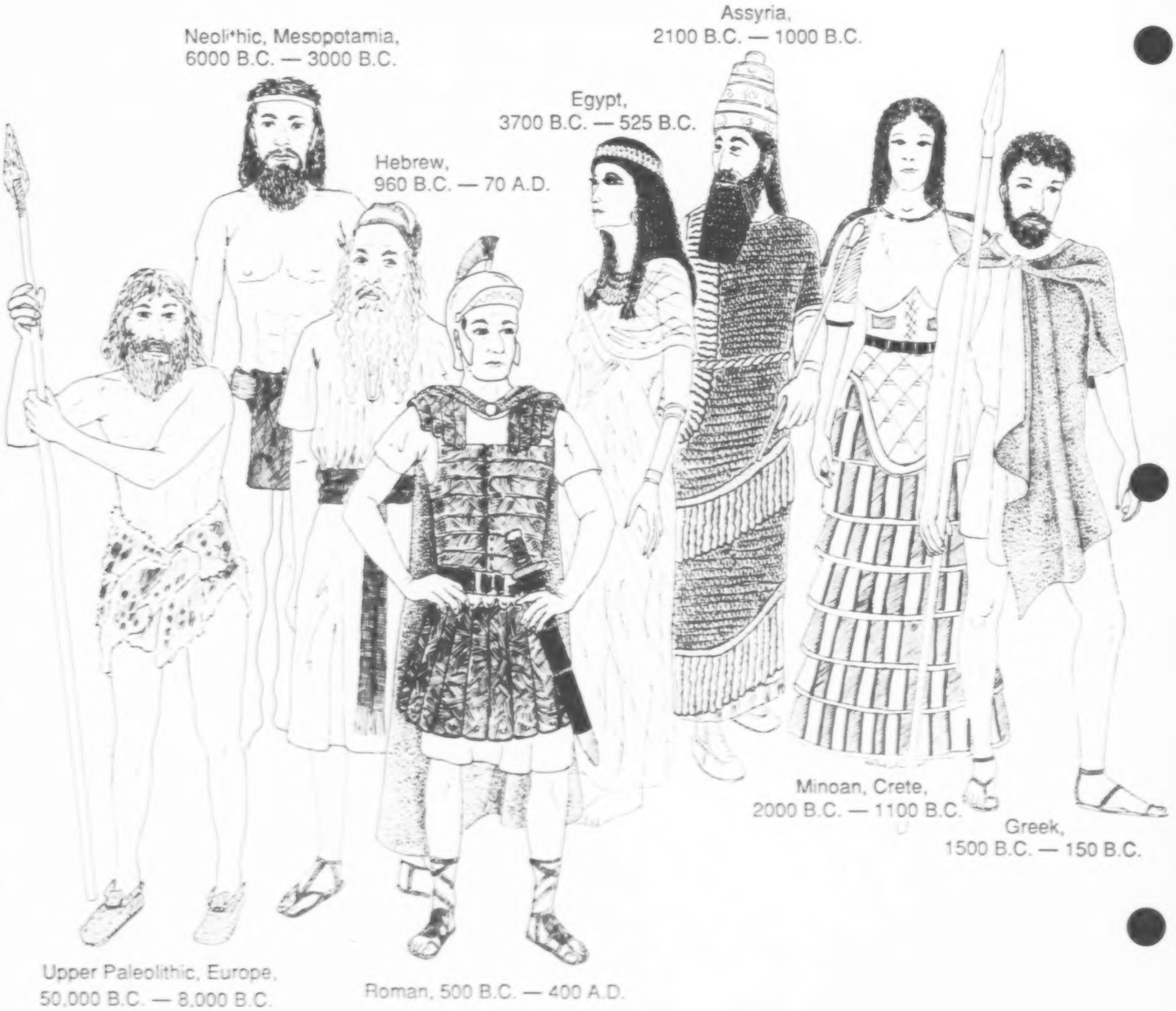
STYLES AND SILHOUETTES


1900
1913
1929
1933
1945

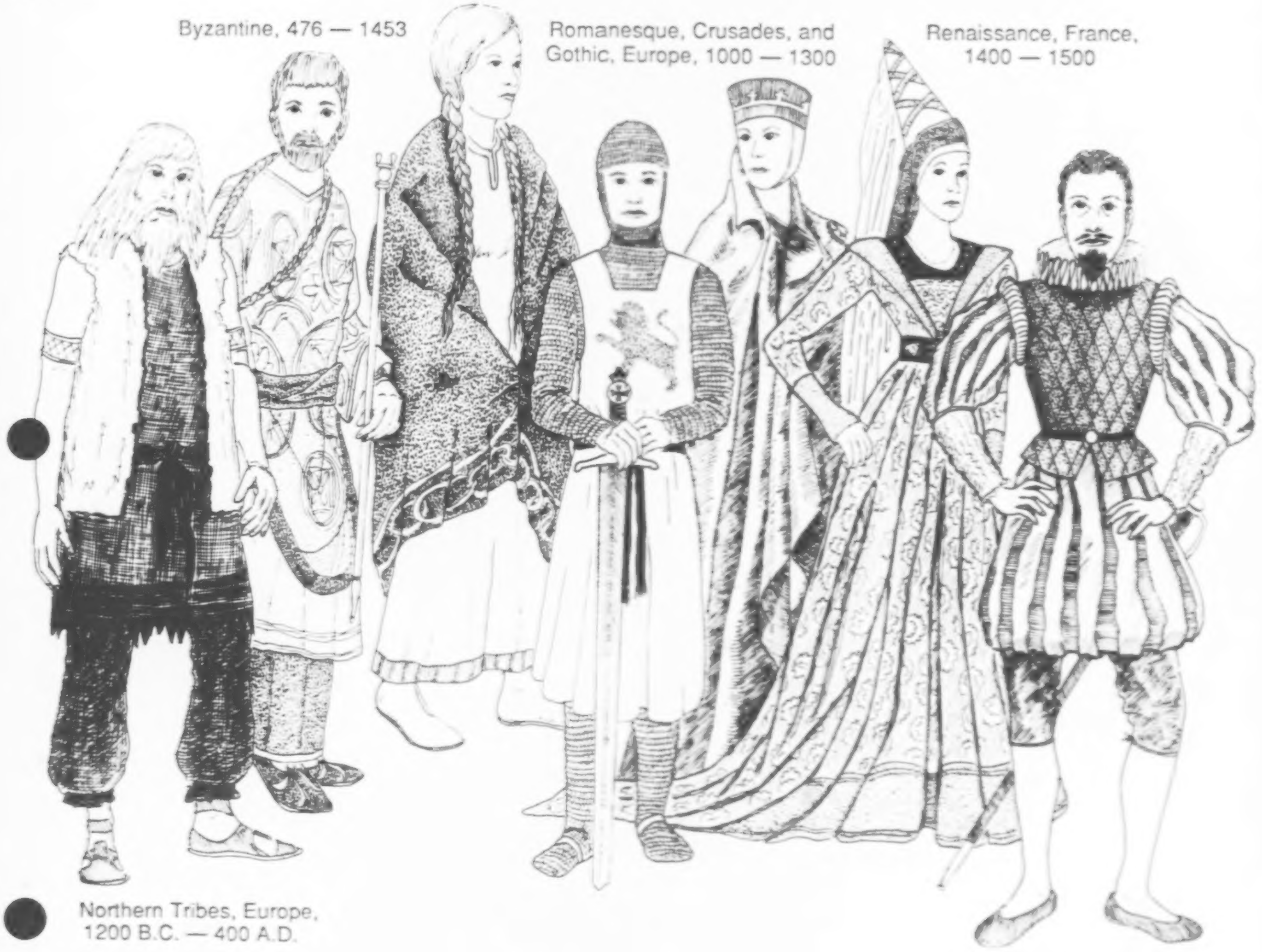

1947
1955
1963
1969
1975

TA 18a

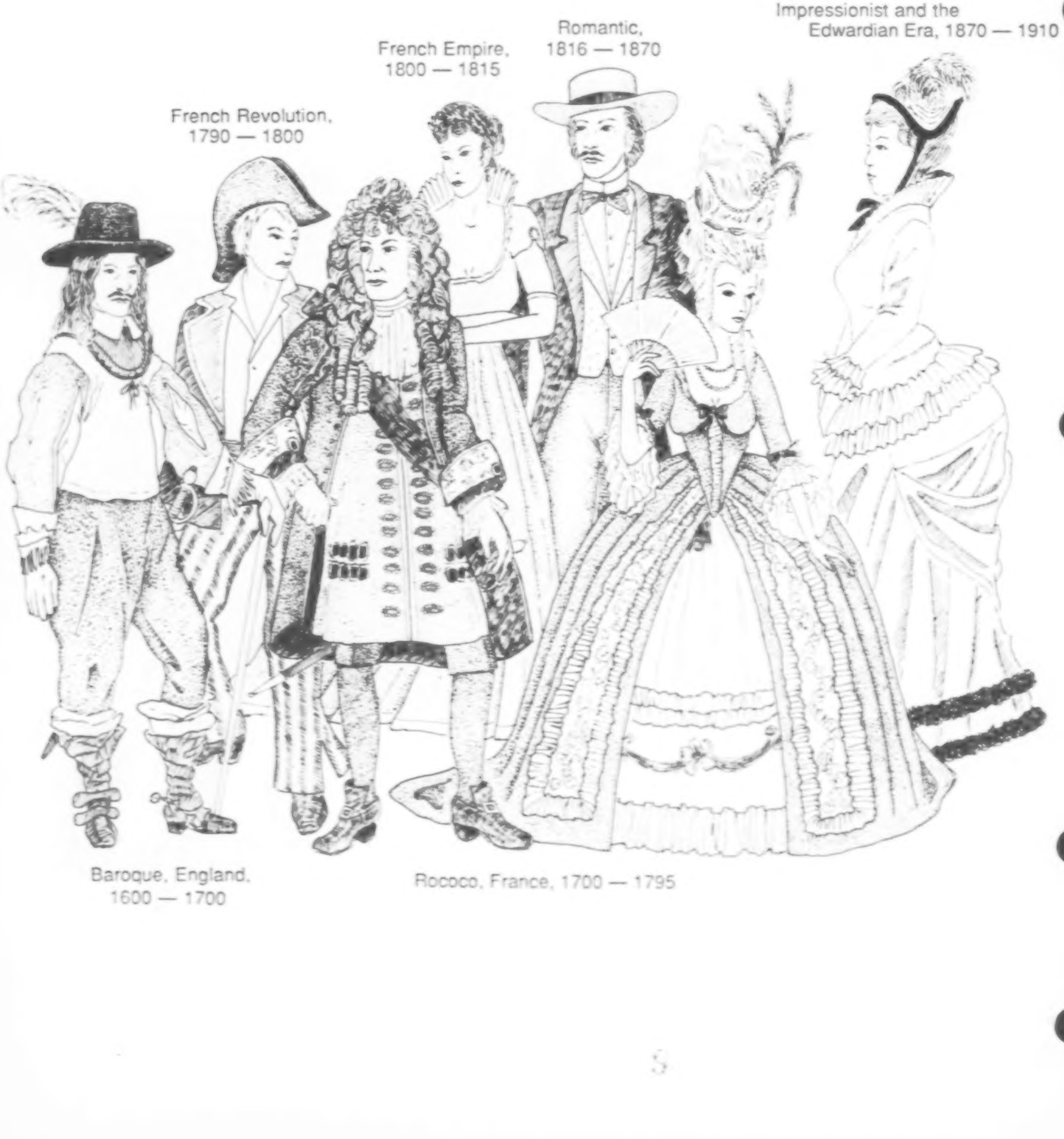
HISTORIC CLOTHING


Neolithic, Mesopotamia,
6000 B.C. — 3000 B.C.
Assyria,
2100 B.C. — 1000 B.C.
Egypt,
3700 B.C. — 525 B.C.
Hebrew,
960 B.C. — 70 A.D.
Minoan, Crete,
2000 B.C. — 1100 B.C.
Greek,
1500 B.C. — 150 B.C.
Upper Paleolithic, Europe,
50,000 B.C. — 8,000 B.C.
Roman, 500 B.C. — 400 A.D.

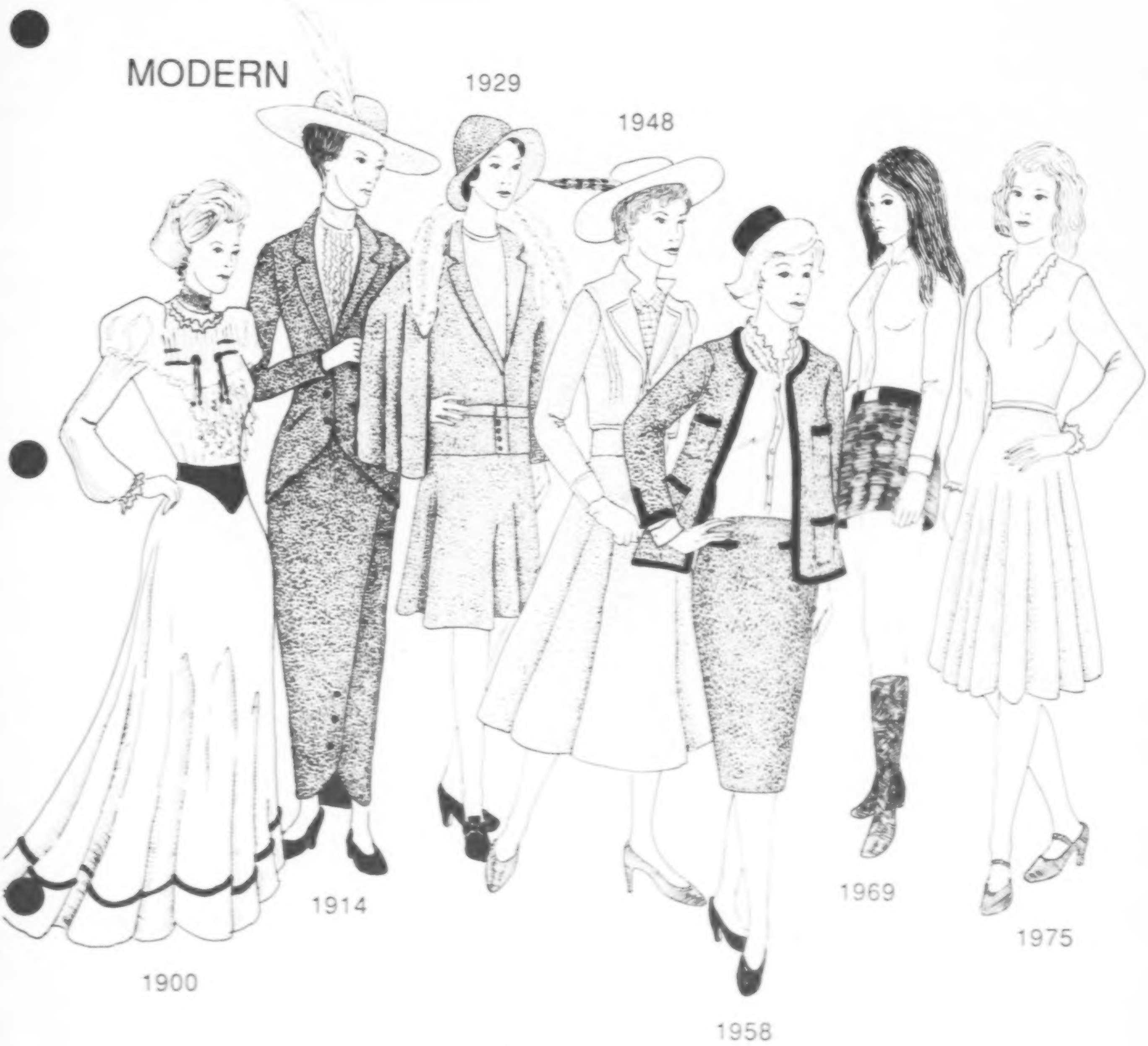
HISTORIC CLOTHING


Early Medieval, 700 — 900
Byzantine, 476 — 1453
Romanesque, Crusades, and Gothic, Europe, 1000 — 1300
Renaissance, France, 1400 — 1500
Northern Tribes, Europe, 1200 B.C. — 400 A.D.
High Renaissance, Spain, 1500 — 1600

HISTORIC CLOTHING


Impressionist and the Edwardian Era, 1870 — 1910
Romantic, 1816 — 1870
French Empire, 1800 — 1815
French Revolution, 1790 — 1800
Baroque, England, 1600 — 1700
Rococo, France, 1700 — 1795

HISTORIC CLOTHING


MODERN
1929
1948
1900
1914
1958
1969
1975

TA 19

History of Textile Manufacturing

Stage 1

Scientist attempts to imitate natural fibers

Stage 2

Design of fibers to fulfill specific end uses for particular textile products

Stage 3

Development of textured filament fibers with specific end uses

Origin of Textile Products

Item	Where Was the Fabric Manufactured?	Where Was the Item Assembled?
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Home Inventory

ITEM	COUNTRY OF ORIGIN	TYPE OF COUNTRY	
		DEVELOPED	DEVELOPING

Consumer Rights

The Right to Be Informed	Analyze advertisements. Look for recent developments and information on goods and services. Understand performance claims. Check and use care instructions before buying. Seek information when existing information is inadequate.
The Right to Safety	Examine products for safety features. Study care instructions before buying and using. Study product safety ratings. Inform retailers and/or manufacturers of poor performance.
The Right to Choose	Be selective. Resist pressure. Buy products, services efficiently. Recognize resource limitations. Know motives. Be honest. Refuse products that waste resources. Use comparative shopping.
The Right to Be Heard	Suggest consumer legislation. Suggest product improvements. Let merchants know what is expected. Know where to seek help. Write congressional representatives. Write protest letters.
The Right to Redress	Explain the problem carefully and briefly. State what you believe should be done about your claim. Explain how the purchase is defective. List the steps already taken to solve the problem. Give as much specific information as possible including style numbers, catalog numbers, order numbers, etc. State when and where the item or the service was arranged for, or include copy of sales receipt. Keep a copy of the letter of complaint. If a second letter is written, include a copy of the first.
The Right to Consumer Education	Take advantage of consumer education seminars and workshops. Subscribe and read consumer education related magazines. Keep up-to-date on current consumer legislation. Learn about the other consumer rights and use them responsibly.

Consumer Responsibilities

The Responsibility to Use Information

- Look for information about products.
- Compare and evaluate products.

The Responsibility to Use Products Safely

- Use products as they were intended to be used.
- Follow recommended procedures for the care and maintenance of products.

The Responsibility to Choose Carefully

- Use buying power intelligently.
- Encourage ethical business practices and safe and reliable products.

The Responsibility to Speak Up

- Provide feedback to producers by expressing satisfaction and complaints through proper channels.

The Responsibility to Seek Redress

- Follow up on problems that need to be corrected until desired results are achieved.

The Responsibility to Be Consumer Educated

- Keep up-to-date on consumer information and legislation.

Guidelines for Making Effective Consumer Complaints

1. When purchasing a product, save the sales receipt and write down the salesperson's name.

2. If the product proves to be defective, visit or call the store and speak with the salesperson.

3. If the salesperson does not satisfy your request for a refund, repair, or new article, contact the manager in writing or by telephone.

4. If the manager does not satisfy your request, do all of the following:

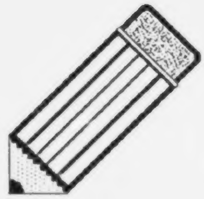
   a. If dealing with a large retail chain or nationally advertised product, write directly to the president or chairperson of the board. The name and address of these persons may be obtained from your local library. Be sure to enclose a copy of your letter of complaint.

   b. Write to local and state consumer organizations concerning your problem. Enclose a copy of the letter you sent the chairperson of the board or the president of the company.

   c. Write to national consumer-help agencies and consumer action panels for assistance. These organizations include the Major Appliance Consumer Action Panel (MACAP) and The Automobile Consumer Action Program (AUTOCAP).

5. If the problem is still unresolved, present your complaint before the state attorney general's office.

Letter of Complaint



2544 California Street
Mytown, Texas 11111
March 15, 19??

Ms. Caroline Redbird
President
The Coriandar Collection
P. O. Box 33445
Anytown, USA 00000

Dear Ms. Redbird,

I am writing to inform you of my dissatisfaction with an imported, kidskin handbag manufactured by Purses, Inc. and purchased from your company by mail order (item #S388P) on April 30.

My complaint concerns the lining of the handbag and the handle on the bag. The lining was torn when I received the bag in the mail. It appears that the lining was not attached securely to the bag when manufactured. In addition, the shoulder strap broke the first time I tried to use the bag. I believe that in all fairness you should accept my return of the handbag to your company and give me a full refund of $85.39.

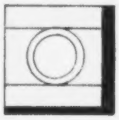
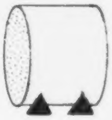
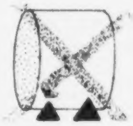
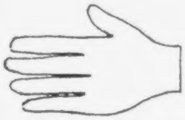
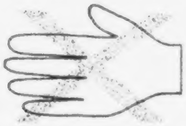
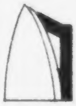
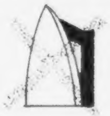
I sincerely look forward to your reply and a resolution to my complaint. I will allow two weeks before referring this complaint to the appropriate consumer agency.

Sincerely,

Serious Shopper

Enclosures: copies of order and payment receipt

INTERPRETING
CARE LABELS

 You may wash by machine or by hand	B Use bleach carefully ~~B~~ Do not use bleach	 You may dry clean	 Do not dry clean
 Wash by hand	 Do not wash	 May be ironed	 Do not iron

Recommended Wash Temperatures

160°	hot water with any soap or detergent
120°	medium hot water with any soap or detergent
105°	warm water with mild soap or mild detergent
CW	use cold water; it lessens the danger of staining and shrinkage
WS	wash separately; it lessens the danger of staining and shrinkage

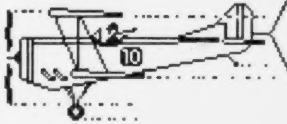
H	hot iron
M	medium-hot iron
C	cool iron
S	steaming iron
L	little or no ironing

DD	drip-dry
TD	you may tumble-dry
SD	spin-dry
DF	dry flat
LD	hang on line to dry
DR	dry rapidly (for example, remove excess moisture between towels)

TA 27

Laundry Products

Product (Brand Name)	Category	Use	Size	Price



The Washing Process

Pretreating

Normal Soils - Rub detergent directly onto soil.

Heavy Soils - Follow directions on washing machine for prewash cycles OR:

- Fill the machine with enough warm water to cover clothes.
- Add detergent.
- When detergent is dissolved, add clothes.
- Allow clothes to soak for approximately thirty minutes.

Sorting

Sort garments according to the following characteristics:

- Color
- Fiber content
- Fabric finish
- Garment construction
- Amount of soil

Separate garments into the following categories:

- White/Colors
- Dark colors/Light colors
- Hot water wash/Warm water wash/Cold water wash
- Heavily soiled/Lightly soiled
- Cycles used when washing

Agitation and Spinning

Heavy Soils - Fast
Delicate Items - Slow

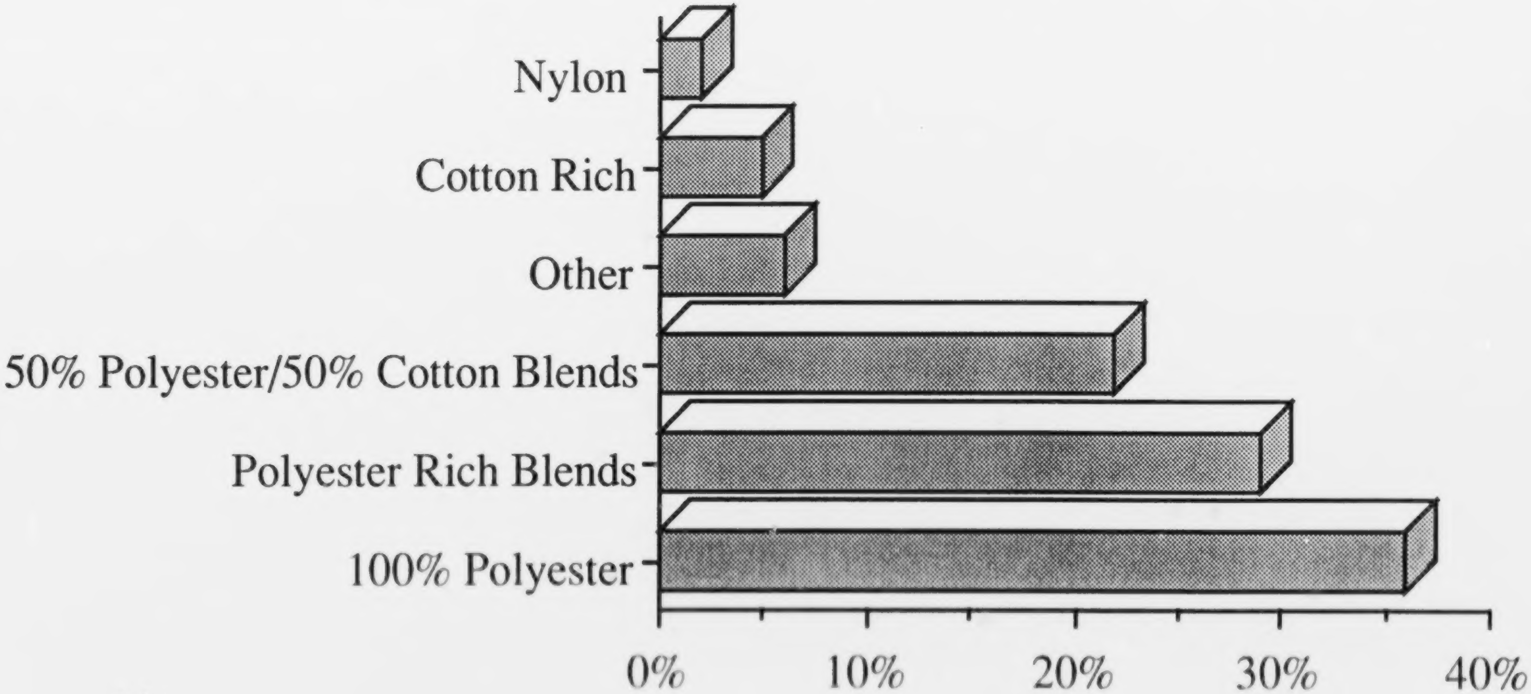
For most effective laundering, follow the care label directions.

TA 29a

Household Textile Fiber Contents

Retail Sales of Curtains

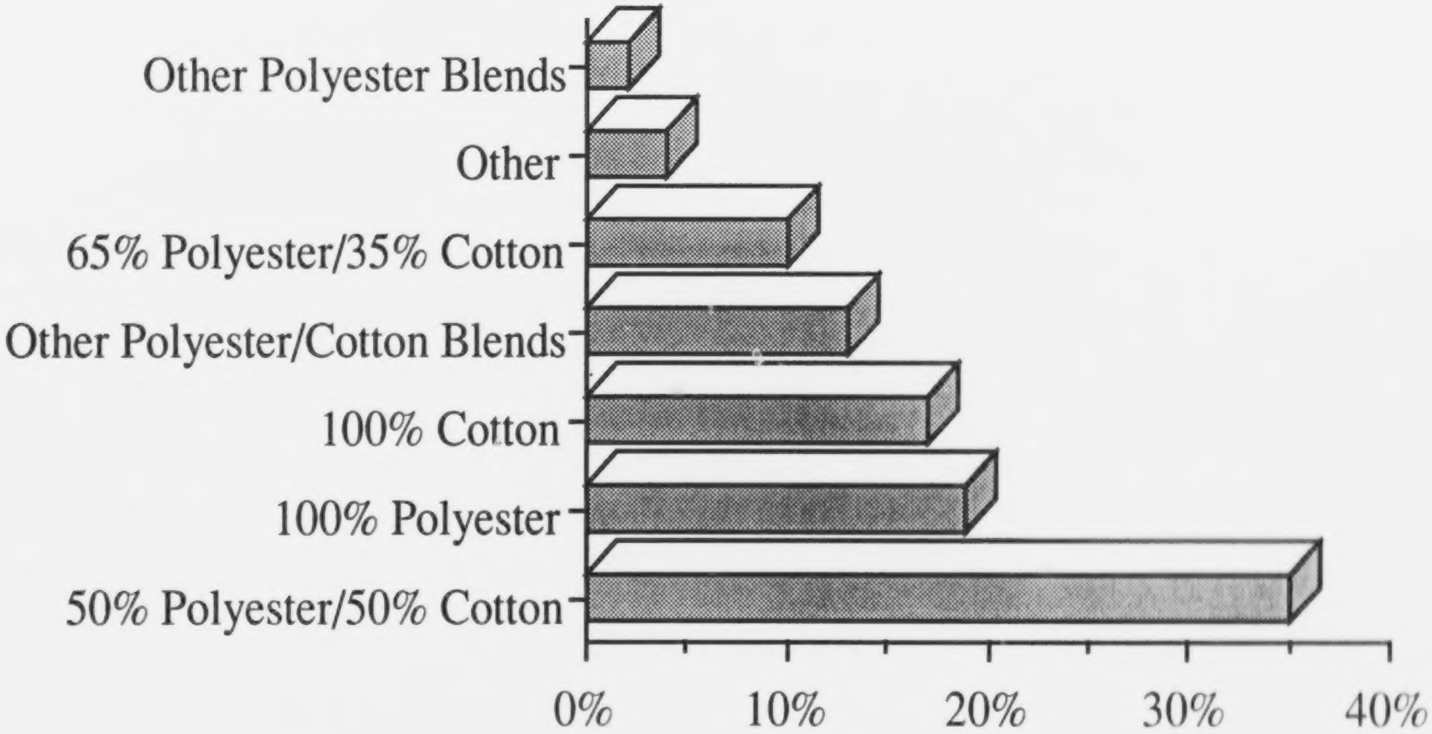
by Fiber



Household Textile Fiber Contents

Retail Sales of Comforters

by Shell Fiber

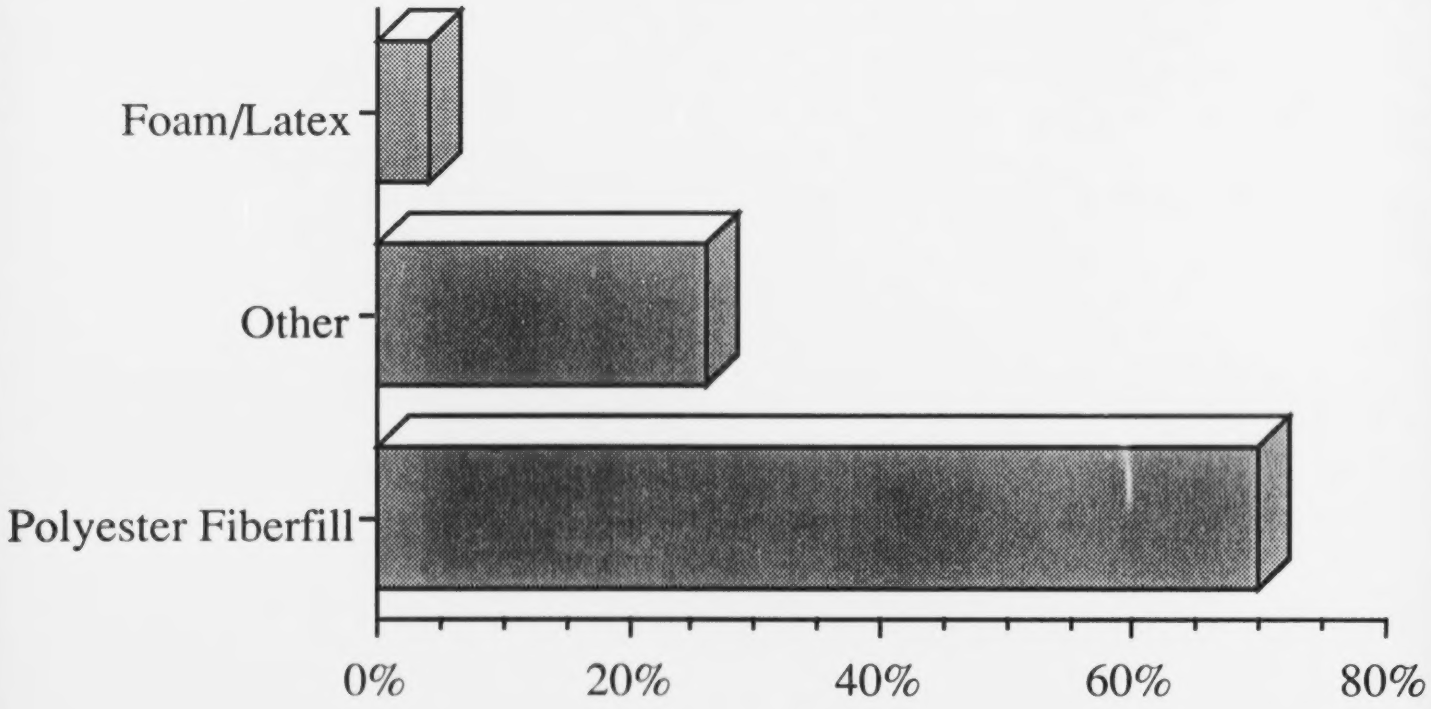


TA 29b

Household Textile Fiber Contents

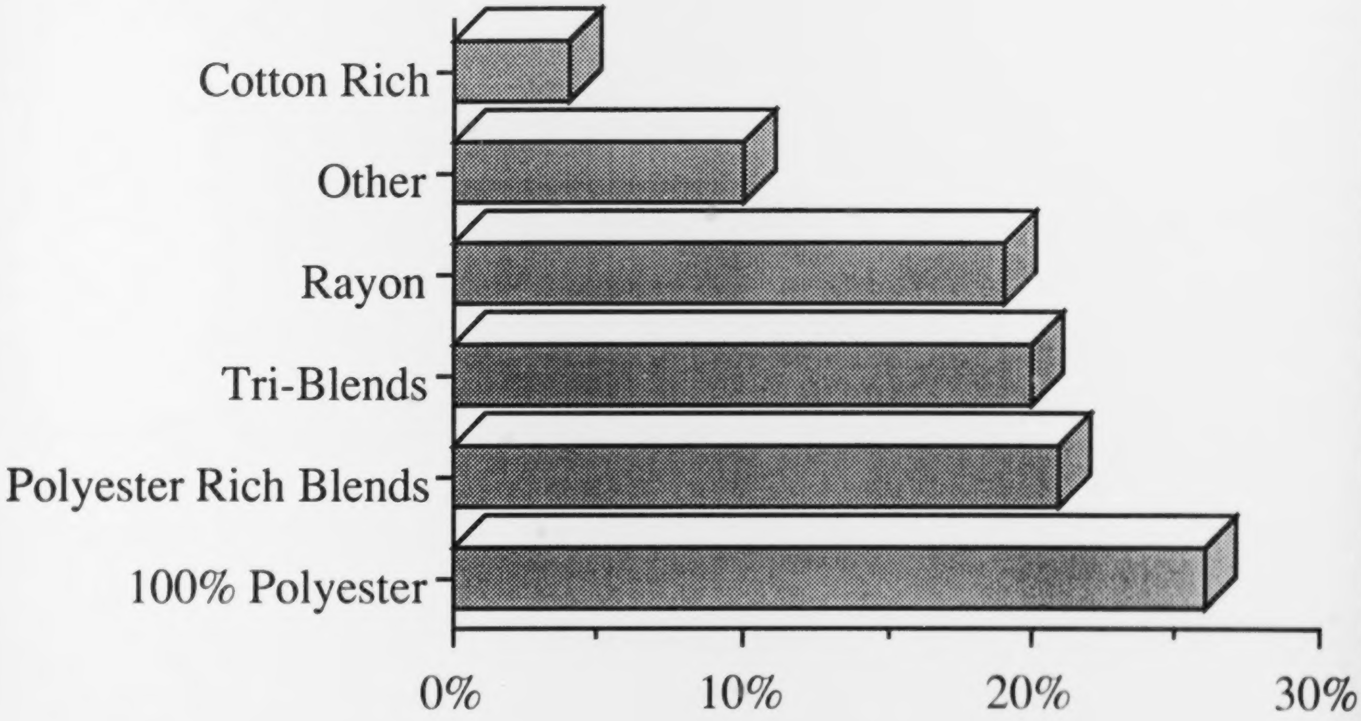
Retail Sales of Bed Pillows

by Type of Fill



Household Textile Fiber Contents

Retail Sales of Draperies
by Fiber



TA 30

Laundry Products

Product (Brand Name)	Category	Use	Size	Price

Textile Fiber Products Identification Act

Passed in 1960 and Amended Subsequently

This legislation requires that each textile product carry a label listing the generic names of the fibers from which it is made. The generic fiber categories are established by the Federal Trade Commission which can add new generic categories as needed. At present, there are twenty-one generic fiber categories for families of manufactured fibers.

The listing of fibers must be in order of the percentage by weight of fibers present in the product. The fiber present in the largest amount is listed first followed in decreasing amounts by other fibers present. Fiber quantities of less than five percent must be labeled as "other fibers" unless they serve a specific purpose in the product. When fibers cannot be identified, their presence must be listed as "X percent of undetermined fiber content."

The law prohibits the use of misleading names that imply the presence of fibers not in a product. Labels must carry either the name, trademark, or registered identification number of the manufacturer. All items covered under the law must be clearly and visibly labeled as to whether they are imported or produced in the United States.

Wool Products Labeling Act

Passed 1939

This legislation regulates the labeling of sheep's wool and other animal hair fibers. The Wool Products Labeling Act requires that all wool products be labeled and the fibers, except for ornamentation, be identified as either new or recycled wool. The rules and regulations of the Federal Trade Commission require that the terms *wool, new wool,* and *virgin wool* be applied only to wool that has never been used before. Recycled wool can be wool that has never been utilized by the ultimate consumer but has been spun into yarns or woven or knitted into cloth. These formed but unused pieces of yarns or fabrics are pulled apart and the fibers are reprocessed into fabrics. Recycled wool can also be wool that has been used by consumers and is reclaimed by pulling the fabrics apart into fibers and spinning and weaving the fibers into other yarns and fabrics.

The law also states that the percentage of wool used in the face and the percentage of wool used in the backing of pile fabrics must be printed on the label. The contents of paddings, linings, and stuffings are listed separately from the face fabric content of products but must be listed on the same label. The origin of the wool (imported or domestic) must also be clearly printed on the label.

Fur Products Labeling Act

Passed 1951

This legislation protects consumers from deceptive information on fur product labels and advertisements. The Fur Products Labeling Act requires that the label of a fur product must list the name of the animal that produced the fur and must inform the consumer if the fur has been bleached, dyed, or artificially colored in any other way.

The Fur Products Labeling Act also requires labels to contain information on the type of fur used in the garment, such as waste fur; fur from the ears, throats, paws, tails, or bellies of animals; and scrap pieces. The act also requires labels to list the country of origin of imported furs. The Fur Products Labeling Act requires that all fur products be labeled, even garments with only a fur trim.

Flammable Fabrics Act

Original Provisions Enacted in 1953

This legislation prohibits the sale of fabrics that burn faster, easier, and more intensely than other fabrics. The Flammable Fabrics Act resulted in the development of standards for flame-retardant children's sleepwear and apparel. The act also resulted in flame-retardant household textile products such as mattresses, rugs, and upholstery fabrics. Enactment of the Flammable Fabrics Act has led to the development of new fibers and finishes for production of flame-resistant fabrics.

Elements of Design
Line

Definition

- Lines used in design have characteristics of direction, length, width, and straightness.
- Lines may be straight (vertical, horizontal, or diagonal) or curved, and both types may be combined in one design.

Application

- Structural lines are created by use of seams and darts to give shape and to form a silhouette.
- Decorative lines may be created through use of fabric texture or fabric design or may be added by using trim, accessories, or stitching.

TA 35b

Elements of Design
Shape/Form

Definition

- Shape/form involves the silhouette formed by the outline of a clothing design.

- The silhouette is often considered the most important design line in clothing.

Application

- The three classic silhouettes are the bell, tubular, and back fullness silhouettes.
- By studying a person's shadow, the general silhouette of a garment can be seen.
- A garment silhouette should be chosen to compliment a body shape.

Elements of Design

Space

Definition

- Space is the background against which forms or shapes are seen.
- Space may be used to emphasize or camouflage physical characteristics.
- Space provides a relief from looking at a pattern on a clothing design.

Application

- The space between patterns on a garment can help create an illusion of size. For example, a widely spaced print fabric may appear more like a solid fabric than a print with closely spaced patterns. The two prints create different illusions of body size.

Elements of Design
Texture

Definition

- Texture is found in the fabric thickness and on the fabric surface.

- Texture is the look and feel of a fabric, resulting from the way the material is made.

Application

- Various words are used to describe texture including fuzzy, smooth, rough, sheer, ribbed, coarse, and bulky.

- Texture can be used to create illusions about size. For example, a rough, thick-textured sweater can cause a small person to appear larger.

- Prints can create a texture illusion.

Elements of Design
Color

Definition

- Color is the aspect of clothing which is most often noted and remembered.
- The color wheel is used to show characteristics of colors (hue, value, and intensity), to create different colors, and to develop color schemes/color plans.

Application

- Colors suggest different qualities. For example, black can seem heavy and dignified.
- Colors and color combinations can be used to make a person appear larger or smaller. For example, warm colors, extreme values, and intense colors can cause people to look larger than they are.
- Colors can be used to emphasize some features and draw attention away from others. For example, a person might draw attention to a small waist by wearing a contrasting belt.

Principles of Design

Balance

Definition

- Balance is the arranging of design parts to create a feeling of rest and equilibrium.
- Formal balance (symmetrical)—The design is the same on each side of the design center.
- Informal balance (asymmetrical)—The design is balanced but is different on each side of the design center.

Application

- Formal—A vest with no closure and pockets of the same size and in the same place on either side.
- Informal—A vest with a button closure down the center and one pocket.

Principles of Design
Proportion

Definition

- Proportion refers to the relationship of parts to each other and to the design as a whole based upon the division of space.
- All parts of the design look good together.

Application

- Clothing should simulate ideal body proportions. For example, a long-waisted person should wear a garment that is not fitted at the waistline.

TA 36c

Principles of Design
Rhythm

Definition

- Rhythm refers to the illusion of motion as the eye moves easily from one part of the design to another.
- A pleasing design arrangement.

Application

- Repetition of lines or shapes in a design create rhythm.

Principles of Design
Emphasis

Definition

- Emphasis is created when attention is drawn to a certain part of a design.

- The center of interest dominates the design.

Application

- Emphasis is created by contrast in texture, color, and line or by use of unusual shapes, textures, and colors.

Principles of Design
Harmony/Unity

Definition

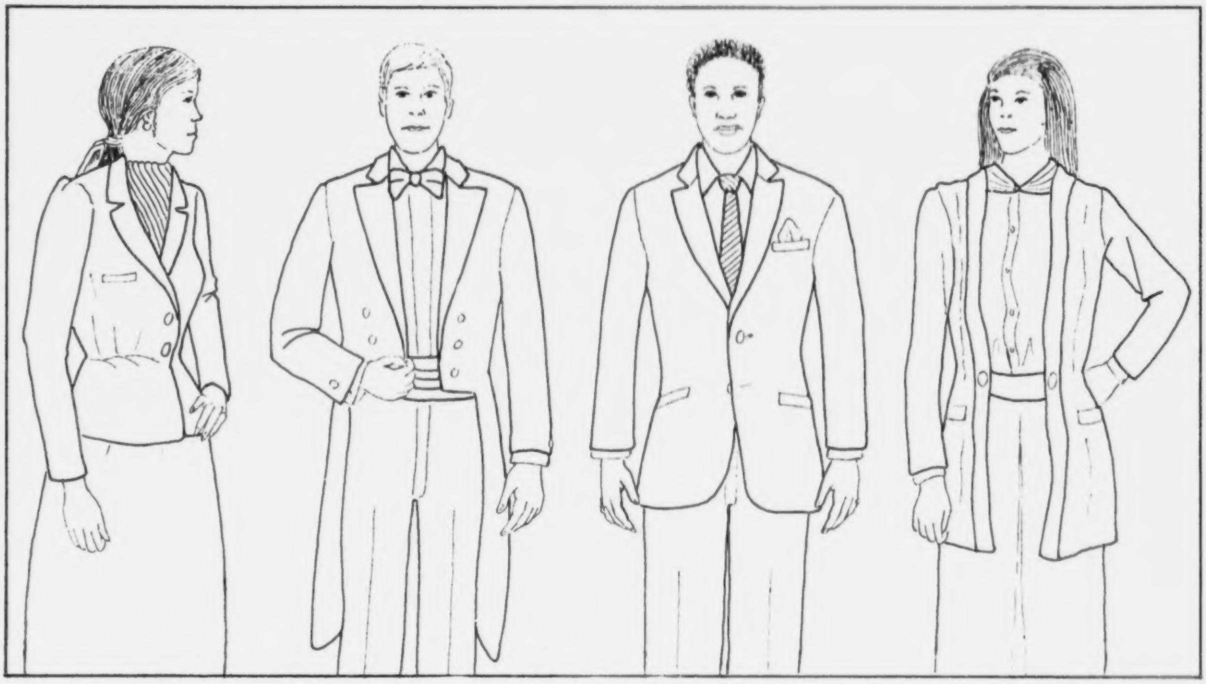
- Harmony/unity is created when all parts of the garment work together to create a pleasing, whole design.
- The garment and the body appear to be well-suited for each other.

Application

- Appropriate applications of balance, proportion, rhythm, and emphasis create harmony/unity.

BALANCE

1. Label each sketch below as illustrating formal balance or informal balance.



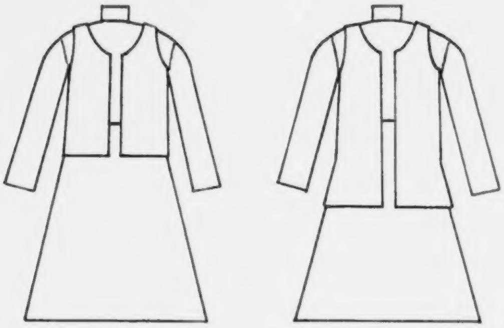
A. __________ B. __________ C. __________ D. __________

2. Define the following terms:
   A. Symmetrical ______________________________
   B. Asymmetrical ______________________________

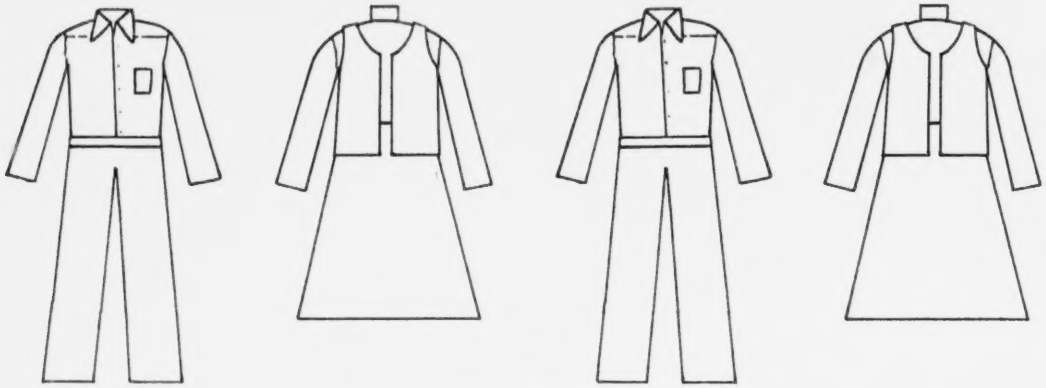
Answers:
1.A. informal; 1.B. formal; 1.C. informal; 1.D. formal
2.A. The design is the same on each side of the center of the design.
2.B. The design is balanced, but is not the same on each side of the design center.

PROPORTION

The principle of proportion can be seen in the relationship between jacket length and pant or skirt length. Since ideal body proportions are not equally distributed, a space divided into equal parts is usually not as pleasing as a space divided into unequal parts.



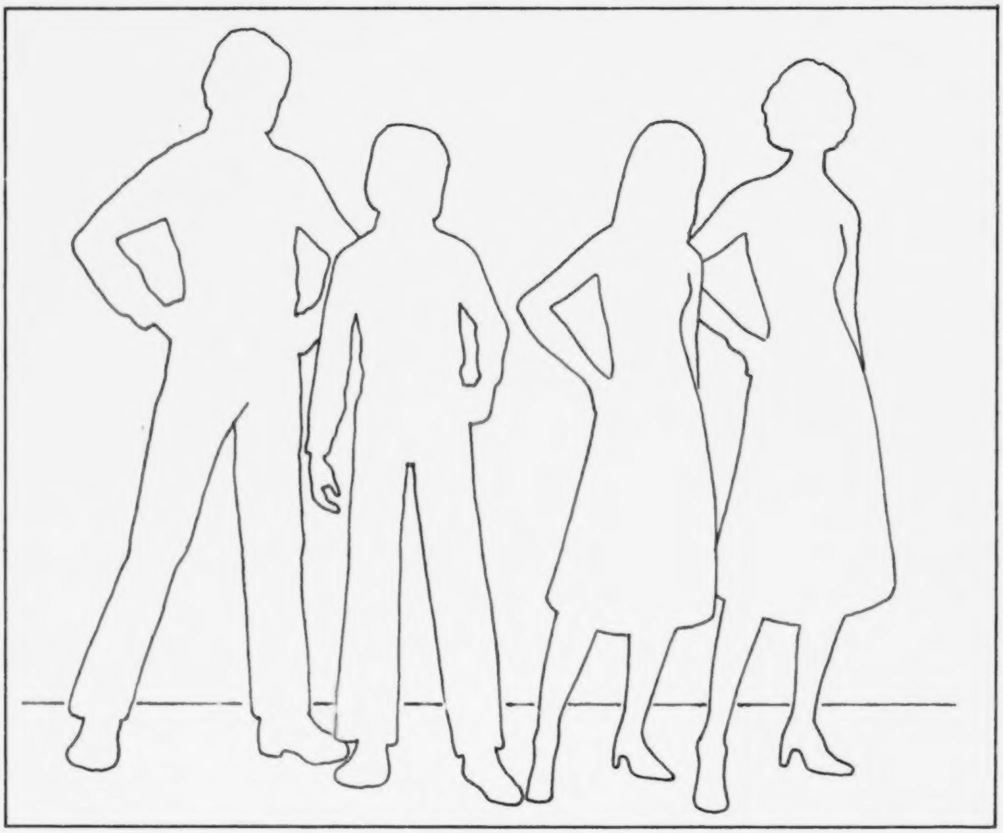
Experiment with proportions by using colored pencils or markers to design pleasing proportions on the basic garments below. Using a dominant color is pleasing when two or more colors are used.



TA 38b

PROPORTION

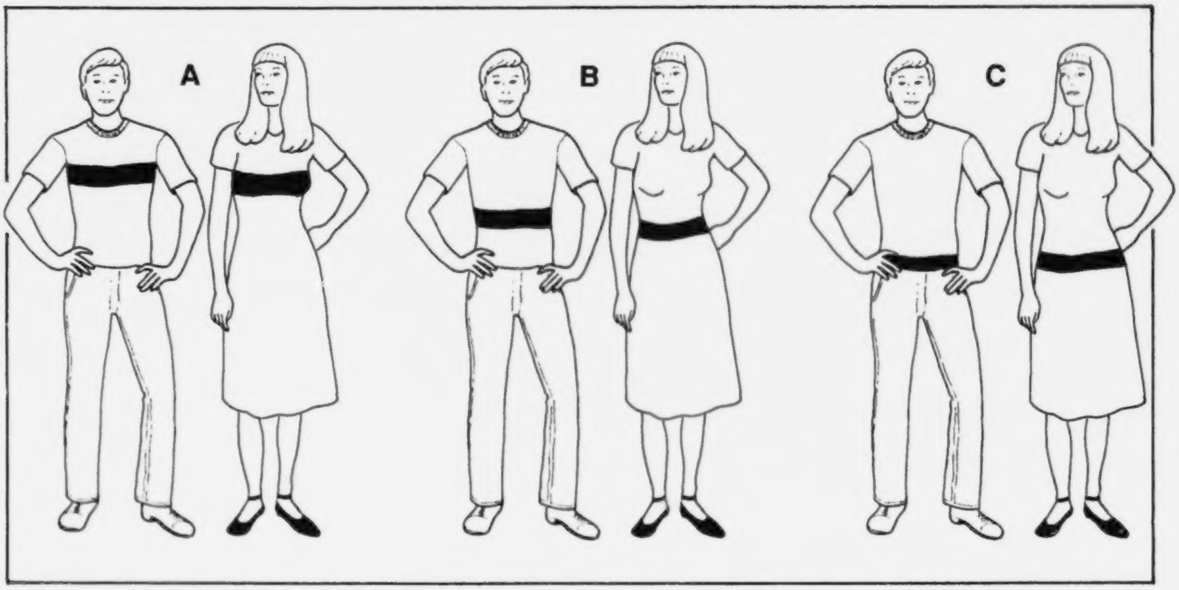
Designs have better proportion when scale is considered. A garment is more pleasing when its parts are scaled to the size of the person wearing it. (Scale should be considered when choosing accessories, fabric design, collars, and when making other clothing decisions.)



Use the outlined figures to indicate how clothing design and accessories could be appropriately scaled for large and small body types. Use patterns, accessories (belts, handbags, etc.), and colors to illustrate scale.

EMPHASIS

The illustrations below show ways that emphasis in clothing design can work for or against a person. Based on these illustrations, answer the questions below.



1. Which outfits would you choose if you wanted to emphasize the upper part of the body? ______________________
   Why? ______________________
2. Which outfits would draw attention to excessively heavy hips? __
   Why? ______________________
3. Which garments would emphasize a small waist? ___________
   Why? ______________________
4. Write a description of your figure/body shape in the space below.

5. Describe any part of your figure/body shape which you wish to avoid emphasizing.

6. Based on your answer to question 5, how should you use emphasis in selecting clothing?

Rhythm

1. Write a definition for rhythm in the space below.

2. Rhythm can be created by repetition or by progression. Attach an illustration of each method and describe how each helps to achieve rhythm.

   A. Repetition

   B. Progression

Answers: 1. Rhythm exists when the parts of a design are arranged so that the eye moves easily from one part to another.

2.A. Repetition involves repeating lines and shapes in a design.

2.B. Progression involves using a series of objects ranging from small to large or large to small.

Harmony/Unity

1. Write a definition for harmony/unity in the space below.

2. Select an illustration of a garment that shows good use of harmony/unity. (The garment and person's body should appear to be well-suited for each other.) Attach the illustration in the space below.

3. Explain how balance, proportion, rhythm, and emphasis were used to create harmony/unity in the garment illustrated above.

Answer: 1. Harmony/unity is created when all parts of the garment work together to create a pleasing, whole design.

Should I Recycle This Garment?

1. Determine the best way to recycle the garment and draw an illustration of the recycled garment.

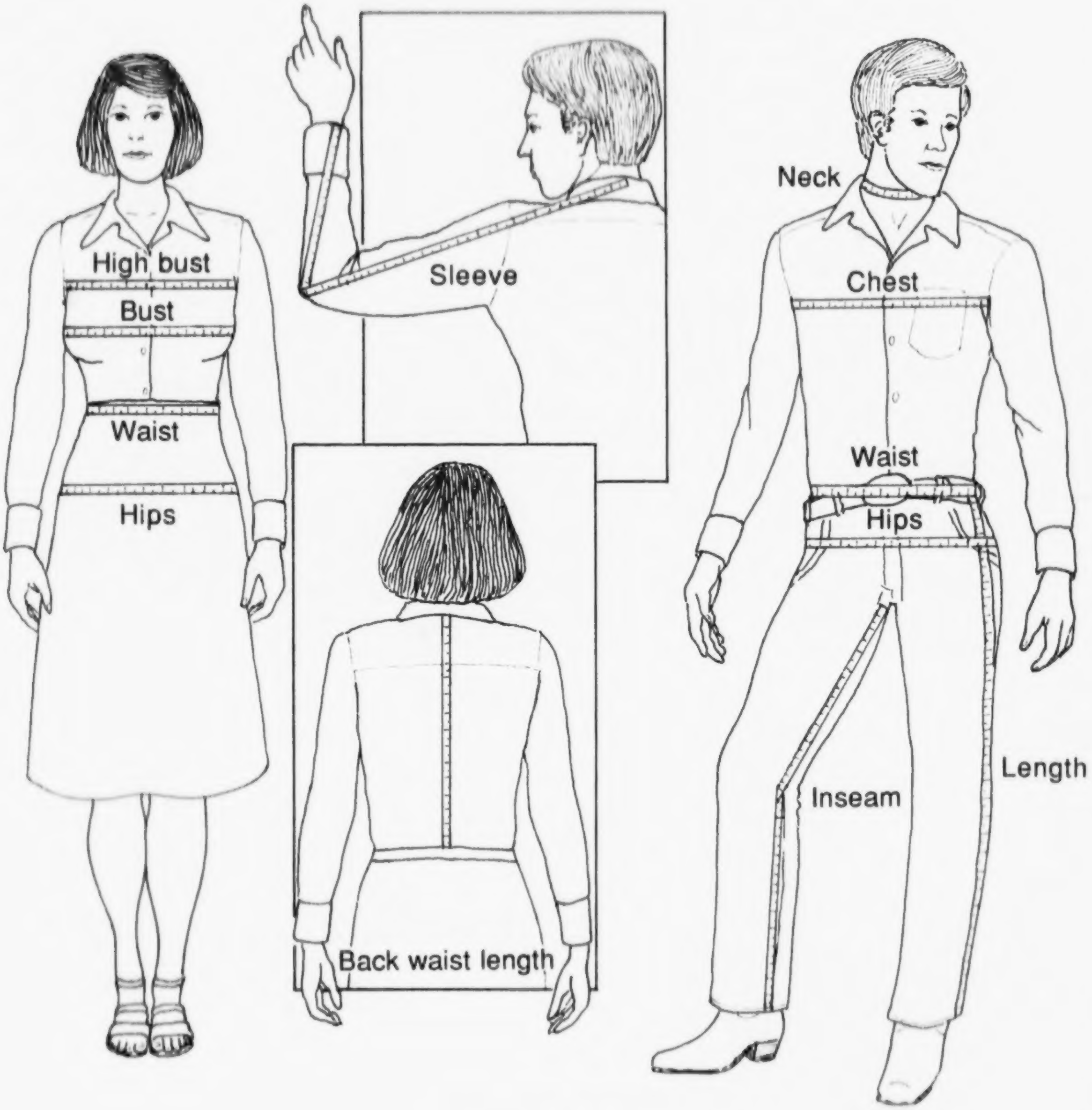
2. Identify the construction skills necessary for completing the garment. Do you have the necessary skills?

3. Estimate the cost of supplies and materials needed to complete the project. Is the recycling cost less than the replacement cost?

4. Estimate how much time it will take to recycle the garment.

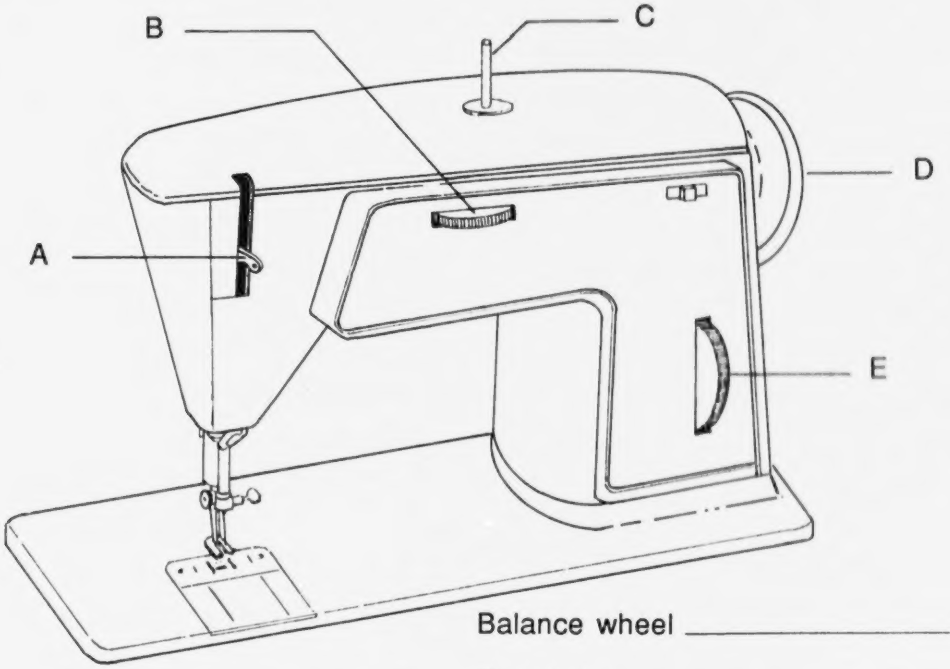
5. Determine the usefulness of the finished product.

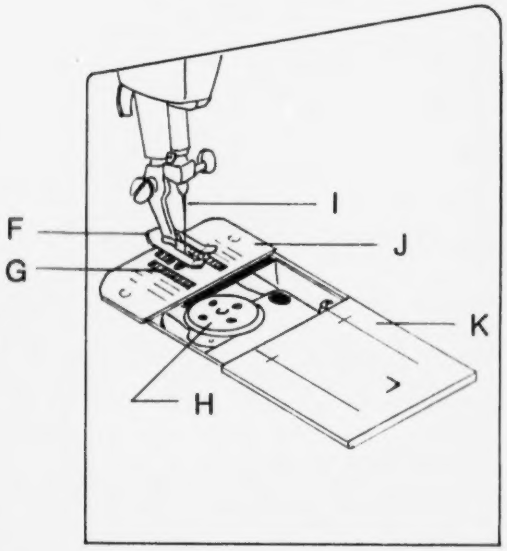
TAKING BODY MEASUREMENTS


High bust
Bust
Waist
Hips
Sleeve
Back waist length
Neck
Chest
Waist
Hips
Inseam
Length

THE SEWING MACHINE

Directions: Look closely at the diagram of a sewing machine. Indicate on the diagram the name of each part, and briefly describe its function in the space provided.





Balance wheel ______________________________

Spool pin ______________________________

Stitch regulator ______________________________

Tension dial ______________________________

Thread take-up lever ______________________________

Bobbin ______________________________

Presser foot ______________________________

Feed ______________________________

Throat plate ______________________________

Slide plate ______________________________

Needle ______________________________

Costing Apparel

Manufacturer's Cost

Fabric	
1 1/4 yards at $1.75	$ 2.18
Belt	
Including buckle	$ 2.89
Labor–Wages	
Sewing, finishing, & pressing	$ 22.60
Labor–Fringe Benefits	
Social Security, health insurance, & retirement	$ 8.22
Overhead	
Rent, insurance, utilities, trade discounts, salaries, cost of samples, etc.	$15.43
Total cost	$51.32
Taxes	$ 3.22
Profit	$ 2.00
Wholesale price	$56.54

Retailer's Cost

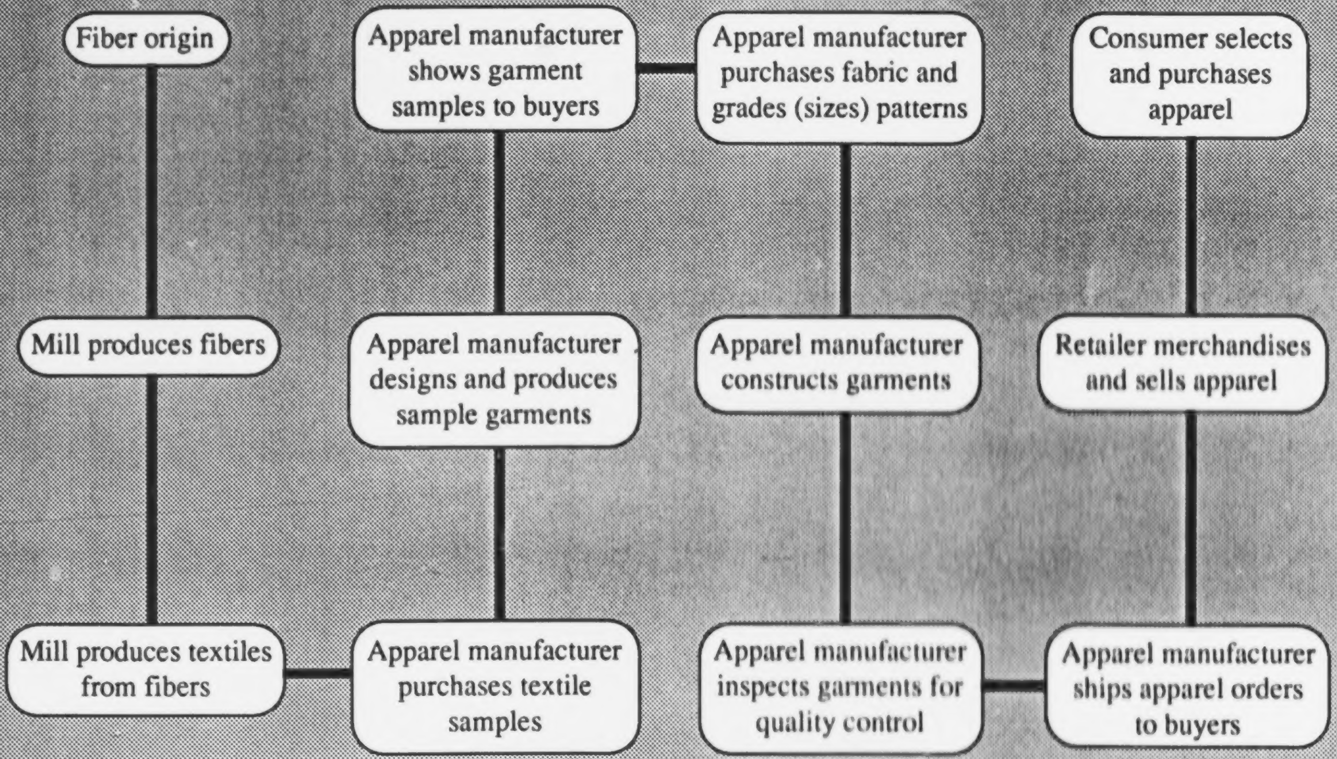
$56.54 less discount for prompt payment	$ 50.00
Markdowns	
average for all stock	$ 10.00
Shortages, theft, etc.	$ 3.25
Alterations	
Average cost of maintaining department	$ 3.22
Salaries of sales staff	
Merchandising & buying staff	$ 7.89
Clerical and stock room	
Receiving, marking, delivery, etc.	$ 5.49
Advertising, display & sales promotion	$ 9.50
Administration	$ 14.00
Employee fringe benefits	$ 8.20
Overhead	
Rent, insurance, utilities, cleaning, security, etc.	$ 15.77
Total Cost	$127.32
Taxes	$ 3.00
Profit	$ 5.00
Retail Price	$135.32

Silk Slacks

Wholesale Price $56.54

Retail Price $135.32

APPAREL
From Origin to Consumer



Fiber origin

Mill produces fibers

Mill produces textiles from fibers

Apparel manufacturer purchases textile samples

Apparel manufacturer designs and produces sample garments

Apparel manufacturer shows garment samples to buyers

Apparel manufacturer purchases fabric and grades (sizes) patterns

Apparel manufacturer constructs garments

Apparel manufacturer inspects garments for quality control

Apparel manufacturer ships apparel orders to buyers

Retailer merchandises and sells apparel

Consumer selects and purchases apparel

Textile and Apparel Industry Organizations

American Apparel Manufacturers' Association
2500 Wilson Boulevard, Suite 301
Arlington, VA 22201

American Textile Manufacturers' Institute, Inc.
1801 K Street N.W., Suite 900
Washington, DC 20006

American Wool Council
(American Sheep Producers Council)
200 Clayton Street
Denver, CO 80206

Crafted With Pride In The USA
1045 Avenue of the Americas
New York, NY 10018

National Cotton Council of America
Communications Services
P.O. Box 12285
Memphis, TN 38182-0285

Southwest Apparel Manufacturers' Association
4C56 Apparel Mart, Box 585931
Dallas, TX 75258

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Apparel and Textile Career Ladders

Study references on jobs in the design, production, and merchandising of apparel and textiles. Arrange each of the following lists of jobs into entry-level, skilled-level, supervisory level, management level, and top levels of career ladders.

Design	Production	Merchandising
Fashion coordinator	Shipping clerk	Salesperson
Designer	Sewing machine operator	Comparison shopper
Sketcher	Cutter	Mail order clerk
Colorist	Patternmaker	Window decorator
Repeat artist	Hand stitcher	Advertising manager
Stylist	Bundler	Copy writer
Assistant designer	Inspector	Artist
Draper	Production supervisor	Fashion coordinator
Samplemaker	Thread trimmer	Display designer
Model	Pattern grader	Buyer
Fabric buyer	Owner	Department manager
Manager	Tailor	Assistant buyer
	Presser	Merchandise manager
	Hand cutter	Store manager

Time for Two

It is difficult for working couples to find time to be alone and enjoy each other. The following suggestions can assist couples in management of time so special time together is scheduled.

- Check into a hotel for a weekend without the children. Arrange a baby-sitting swap with another family or ask friends or family to care for the children.
- Hire a teenager to take the children to a movie, the park, or the zoo on a weekend afternoon. Spend a few hours of time together on an outing or a hobby.
- Do certain chores together. Go grocery shopping while older children do homework. Use the time in the car and in the supermarket to talk.
- Be spontaneous. Instead of washing the dishes some night, go to the park and play tennis.
- Plan one special time to be together every week.
- Make family meals special times. Eat breakfast and dinner together when possible. Turn off the television during meals and talk to each other.
- Communicate freely. Share feelings and express opinions. Make the most of the time available. The quality of time spent together is important.

Make Your Move

Two-career couples may face the problem of relocation and its effect on both careers. While relocation may be a step up to the top for the one being transferred, it may play havoc with the other's career. However, declining a relocation will probably narrow career options for the spouse asked to relocate.

Two-career couples should consider the following questions when weighing the pros and cons of relocation:

- Can your spouse reestablish a career fairly quickly?
- What will happen to your career if you choose not to transfer?
- Can you and your spouse recover financially from the relocation? (Consider cost of living in the new location, taxes, expenses paid by employer, etc.)
- Will the move help you and your spouse reach your goals?
- What characteristics of the present location and job situation are particularly appealing to you and your spouse?